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Pregnancy in Three Dimensional Transparency
A New Type of Visual Teaching Aid

RUTH B. COLEMAN, A.B., and TOM JONES, B.F.A.

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University of Illinois College of Medicine and Dentistry
Chicago, Illinois

A new type of visual teaching aid has been introduced by the fabrication of a greater than life size model of a woman in transparent Plexiglas (Fig. 1). She is modeled in the full round at term pregnancy with pelvis, fetus and uterus visible inside the figure. The successful completion of this figure opens new avenues leading to the development of transparent teaching models. Such models will make visible in their relation to external form many of the complexities of internal structure and physiology which heretofore it has been impossible to illustrate.

It is not true to say that the construction of transparent anatomical models is a new achievement. Some years ago two full size plastic figures, a man and a woman, were constructed in Dresden, Germany, at the Deutsches Hygienisches Museum. There are in the United States three copies of the male figure,¹ only one of the female. This female model² is at present on display in the Museum of Science and Industry of Chicago on an indefinite loan from S. H. Camp and Co. which purchased it from Germany. Standing with arms up-raised, an entirely transparent plastic shell, the figure contains a complete bony skeleton, the arterial, venous and nervous systems, and the viscera of the abdomen, thorax and head. To the best of our knowledge, nothing was ever published by her German fabricators as to the materials or processes used for her construction. Her existence was, however, a challenge as well as a source of inspiration to us. Our original contribution consists in the independent development in this country of methods which will make possible a wide use of transparent three dimensional visual aids.

Our model, the first full size transparent figure in the full round to have been developed in the United States, has been under construction in the Illustration Studios of the University of Illinois Medical School for two years and

Note: The authors wish to extend special acknowledgment and thanks to Mr. Coleman Hewitt, Supervisor in the Department of Education, Chicago Teachers' College, whose expert skill contributed so much to the construction of this figure.

1. Mayo Medical Museum, Buffalo Museum of Science, New York Museum of Science and Industry.

2. First exhibited in the United States, August, 1936, in Radio City, New York, at a special preview.

has just recently been completed. The idea for this project occurred to us early in the winter of 1944. At that time, we had begun research into the potentialities of transparent plastics for medical teaching models while working on the larger and more immediate problem of preparing an extensive lay exhibit on human growth and development to be donated by the University to the Museum of Science and Industry. We finally devised methods for developing transparent models of the human kidney and of the human head after various experiments with sheet Plexiglas.³ Emboldened by the success of our methods for their construction, we began on the infinitely larger project of a transparent pregnant woman as the central figure for the growth and development exhibit.

From her very inception "Beulah" (as our model came to be known in the studio) was prepared to symbolize to a lay group, children and adults alike, an *idea* of pregnancy. Anatomically constructed, she displays the maternal attitude, the body form, the posture and the mechanics of intrauterine life. More than this, she represents an idealized norm of pregnancy so simply stated that a concept of life growing within life may be conveyed even to the youngest museum visitor. As she stands completed, a lamp hidden in the pedestal which supports the figure sends light up a highly polished Plexiglas rod and into the mass of the solid plastic fetus, causing the fetus to glow softly and to assume a vibrant quality symbolic of the new life which it represents.

We believe that the completion of this figure has significance for the future in the preparation of transparent teaching aids. This work is one part of a program of research in visual education in medicine now being carried on in our Illustration Studios. This aspect of the program will increase, we hope, the possibilities of visual education by augmenting the varieties of visual aids at present available.

Other projects now in process in our studios, all adaptations of the principles implied in the development of "Beulah," are models illustrating relationships of underlying forms to surface anatomy of head, thorax, abdomen and pelvis.

These are only a beginning. Given an understanding of the principle of the clear view model—its potentialities and its limitations—as a visual aid, unlimited particular models of great usefulness suggest themselves. It is our hope to develop many such models. It is even more to be hoped that other studios in medical institutions throughout the country will continue necessary experimentation along similar lines so that a volume of such teaching aids may be made available for the expansion, both qualitative and quantitative, of the store of visual aids for medical education.

Certain characteristics of Plexiglas dictate not only its potentialities and limitations, but also the methods to be used in its fabrication. These can be studied in detail in the many books and pamphlets which have been published on the properties, methods of fabrication, etc., of the material. A number of these are listed in the bibliography. For our purpose a brief summary of some of its more important characteristics will be sufficient.

Plexiglas is a thermoplastic synthetic resin which becomes moldable at tem-

3. Plexiglas is the trade name for methyl methacrylate resin manufactured by Rohm & Haas Co. A corresponding product manufactured by E. I. du Pont de Nemours, Inc., is known as Lucite.

peratures ranging from 220-300° F. At these temperatures it can be made to conform to the surface configurations of specially prepared molds. Cooler than 220° F. it "freezes" and thus carries the contours of the mold used. When reheated, it will resume its original form. This tendency to return to original form, the "elastic memory" of the material, is economically advantageous because it makes possible the re-use of Plexiglas sheets. At the same time, it poses limitations since, once molded, small portions of a sheet of the material cannot be reheated for more detailed additional modeling without the constant danger of losing the form already achieved.

Plexiglas can be worked with the same hand and machine tools used for wood and soft metals. It can be sawed, carved, ground, sanded, etc., and buffed to a high polish and transparency. Several techniques for cementing make it possible to join pieces of Plexiglas one to another and, when necessary, to other materials. It is durable and, though it will fracture with excessively rough handling, is for the most part "unbreakable."

Finished to a high polish, it has the optical properties of the finest glass. It not only has high light transmission properties but, in addition, will "pipe" light around curves and angles. These two characteristics offer great possibilities for adaptation to the clear view type of the model.

We have used "light piping" in several instances in our work, including the fetus for the transparent woman, in order to add substance to internal form. Light piped through polished Plexiglas rods from a hidden light source provides illumination for internal structure and makes possible a number of interesting and valuable effects.

The kidney model, mentioned earlier, illustrates the application of light piping to heighten the effectiveness of a model. A lamp hidden in the hollow cavity of a plaster bladder sends light into the distal end of a Plexiglas rod which has been carved, polished and bent under heat to represent the ureter. Light travels, almost undiminished in intensity, up the curved length of this rod and escapes from the frosted surfaces of the carved plastic pelvis and calyces. This glowing mass is visible through a Plexiglas shell which was molded and dyed red to represent the external form and color of the kidney itself. At one glance both external and internal structure are visible in their proper relationships, one to the other (Fig. 2).

This model offers another approach to learning. It adds a visual concept of the relationship of outer to inner mass in all dimensions. Alone, it would be far from sufficient for an understanding of the subject, but it supplements the present available visual aids for the study of "kidney:" the texts, textbook illustrations, diagrams, dissections, movies illustrating renal physiology, plaster and wax models and moulages, microanatomic studies, etc.

Einstein has defined the fourth dimension. In illustration work we are accustomed to think of the second and third dimensions. But, it is becoming obvious to those of us who are working with the superimposition of structure upon structure, made visible through transparency, that we have at our disposal something more subtle and more informative than a simple third dimen-



Figure 1.—Front view of model of transparent pregnant woman.

sion. When movement, through light sequence or mechanical device, is introduced, the medium becomes capable (as has been pointed out already for motion pictures in the evaluation of the dimensions of existing visual aids) of encroaching upon the fourth dimension by intrinsic inclusion of the time or chronology factor so often of tremendous importance for complete understanding of bodily processes.

These studies have been made possible largely through the establishment of

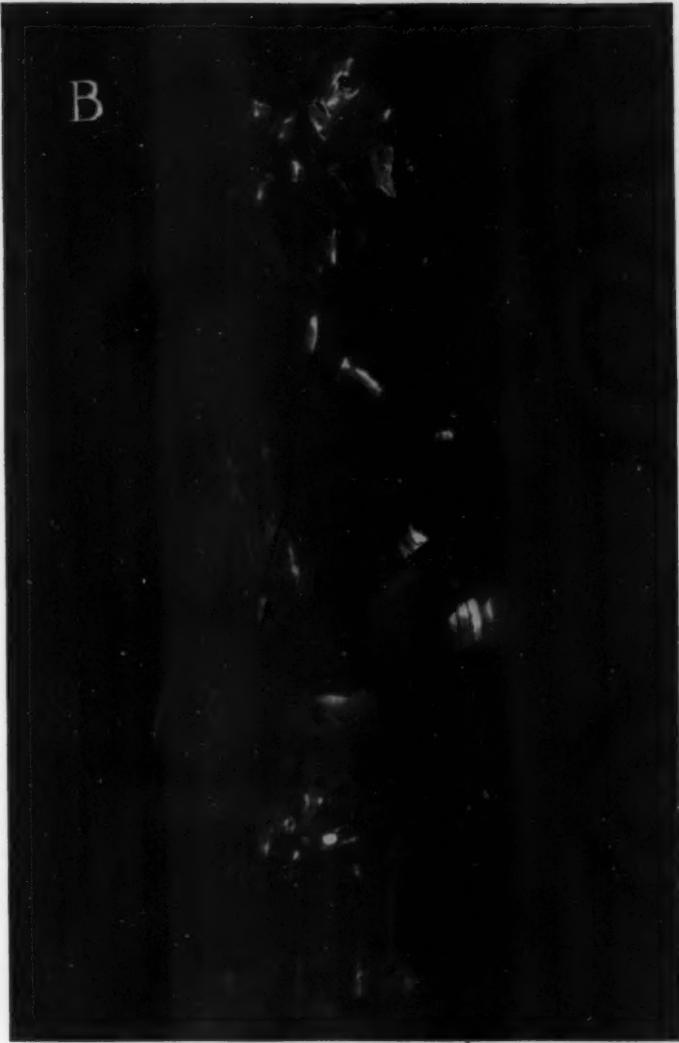


Figure 2.—Side view of same model showing fetus in transparent uterine sac and illumination of fetus by light "piped" from pedestal.

a fund at the University of Illinois by the late Dr. Arthur E. Hertzler. Its aim is "to promote the scientific study of visual education on a broad basis. In addition to a long range program of research and experimentation on the design and effective use of a variety of visual aids, a survey is planned which will cover methods, practices and experience in the use of graphic media in American medical institutions."

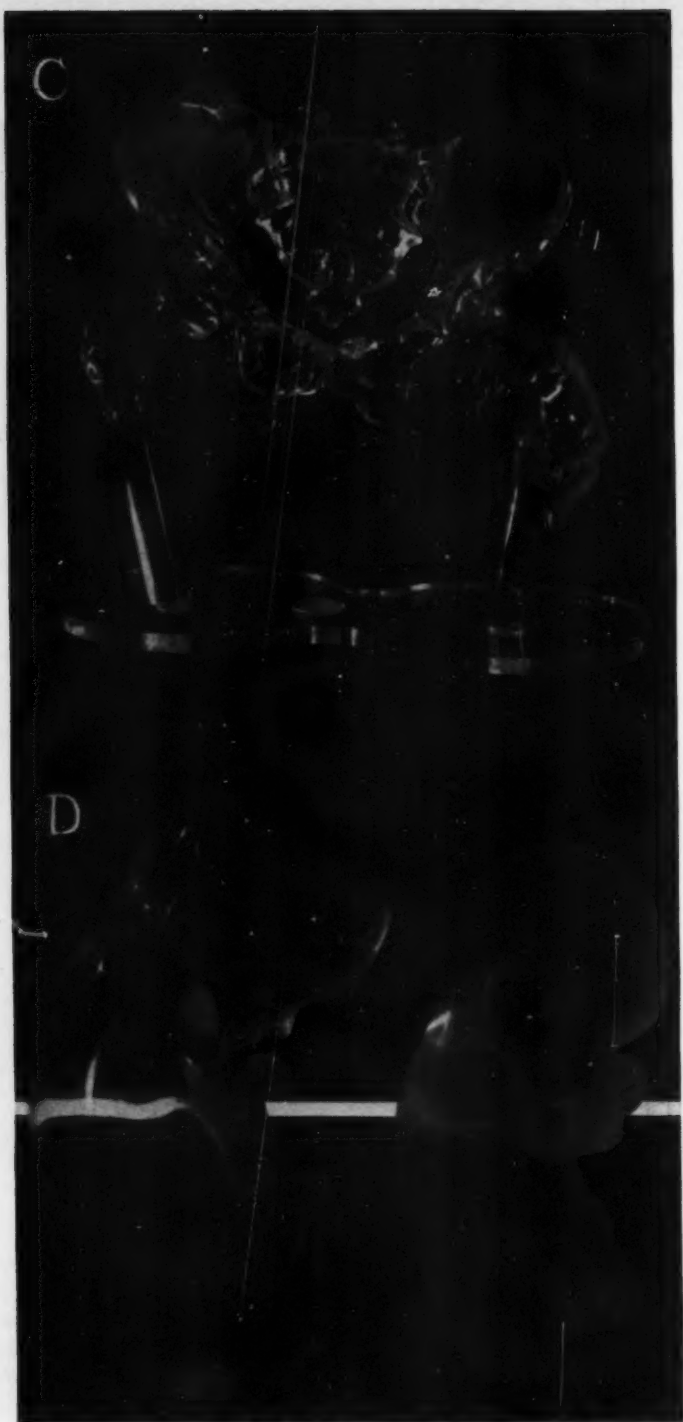


Figure 3.—Close up view of Plexiglas pelvis for transparent woman. This was formed by carving and heat molding.

(Lower figures.)—Two fetus models formed by pouring monomeric methyl methacrylate into negative plaster molds and curing at low temperatures. The ribbon of light behind the two models emphasizes possible effects of transparency and translucency which the material affords.



Figure 4.—Kidney model formed of Plexiglas. Light source is hidden in plaster bladder. Notice illumination of pelvis and calyces achieved by light "piping."

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The Application of Electrical Recording Methods to the Student Laboratory for Physiology and Pharmacology

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Classically the "old Grad's" outstanding recollections of physiological experiments are of soot stained hands arranging a maze of wires in which batteries tended to appear in the secondary circuit, and of that hard won perfect record wiped off by a fellow student's elbow. This situation alone made a change of recording methods desirable and there are other equally cogent reasons. The marked success of Western Union "Teledeltos" electrosensitive paper in flight recorders and industrial applications suggested an attempt to modify student equipment to electric writing. The result outlined below has justified the effort. Medical students who have used both the smoked paper and the electrical system have expressed their preference for the new method.

OBJECTIVES

The physiology laboratory of the last fifty years presented a need for the following alterations:

1. Elimination of soilage attendant upon smoking of glazed paper for recording purposes.
2. Elimination of spoilage of records by accidental smudging of tracings not yet shellacked.
3. Elimination of student crowding about smoking and shellacking stands.
4. Elimination of exigencies of shellac supply.
5. Elimination of necessity for critical adjustment of lever pressure against paper (typified by the Marey Tambour Method of recording sphygmograms).
6. Simplification of the student wiring problem. Students have at times remarked that they could not see the physiology for the wires.
7. Unification of the stimulating voltage supply and elimination of the troubles attendant upon use of 1.5 volt dry cells.
8. Elimination of separate time recording levers. This requires a central source of time impulses and the inclusion of time marks within each tracing inscribed on the record.

In summary, the objective sought was, by reducing the complexities of his recording problem, to give the student more time to consider the physiological side of his experiment.

METHODS

1. *Electrosensitive paper*¹ was attractive because the record as made was

1. "Teledeltos" recording paper invented by Western Union research engineers, manufactured and distributed by the Western Union Telegraph Company, 60 Hudson Street, New York 13, New York; made in two types: Type H—for High Voltage; Type L—for Low Voltage. The latter is used in this laboratory.

susceptible to pencilled notes and was not easily smudged.² The passage of less than 15 ma of alternating current at from 50 to 150 volts produced a clearly visible and permanent trace at all speeds of paper or of lever desired for student physiological work. Use of this paper met the first four objectives outlined above.

2. *Fall-away, gravitationally applied levers* had been demonstrated in principle some time ago in the fall-away tambour.³ It remained to apply the design to muscle levers (isotonic and isometric), heart levers, base line markers, etc. (Figs. 1-4.) This has accomplished Objective 5 above.

3. *Industrial ducting and trolleys* installed on the ceiling of the laboratory permit safe and flexible supply of individual electric service and lighting to each student desk without the perennial shorts and other difficulties resulting from aging of conduits laid in the floor or slung from the ceiling. The sliding contacts of the trolleys are self cleansing since they are wiped when the trolley is moved. The trolleys can be moved about over the desks for exact placement of lighting. Three ducts were run over each line of desks with one trolley in each duct for each desk. The first trolley supplies stimulating voltage,—12 volts at the duct, 2 volts at the inductorium. The second trolley supplies 110 volts dc for drop light for surgery. The third supplies alternating current for electric writing (Fig. 5).

4. *Multicolor Jack Boxes* were constructed containing a spring switch which eliminated both simple key and signal magnet in the primary circuit of the inductorium. On the face plate of the jack box are engraved legends signifying the function of each jack (Fig. 6). At the same time, the jacks and all plugs are color coded so that it is necessary for the student merely to match the color of plug and jack to make the system function. Each lever has a permanently fixed lead which terminates in a plug of appropriate color. The box also presents a toggle switch which completes the circuit for the electric writing when one desires to record. So long as the toggle switch is "off," the kymograph can run, the levers can move but no writing is made on the drum, and none of the levers carries any current.

5. *The simplification of the recording of time signals* is almost inherent in the electric writing system. A normally closed switch is introduced at the source of the line going out to supply the writing voltage (Fig. 7). An electronic or mechanical timer operates this normally closed switch in such fashion as to open it at set intervals.⁴ The duration of the open time can be regulated at any fraction of the closed time. Thus, every recording lever will show interruptions corresponding to the time pulses and it remains only to select one's timer pattern to correspond with the speed of drum it is desired to utilize. Since every

2. Oil spots the paper but does not render it illegible; water readily dries without smudging; hand contact does not mar it.

3. The writers are unable to state who originally designed the fall-away tambour. It was first seen in fabrication in the hands of A. G. Broeker of St. Louis University School of Medicine about 1887.

4. The Electronic Timer, Type 30HL1, manufactured by Photoswitch, Inc., 77 Broadway, Cambridge 42, Massachusetts, will suffice if the limits of 0.02 seconds to four minutes pulse interval is adequate. The "off" cycle is limited in this design to a maximum value of about 1.25 seconds, however. An electronic timer especially for this purpose is now under construction after design by Eugene A. Holmes, Boston.

line on the record has the same interruptions the use of a special time recording lever is optional.

A sample recording system for isometric contraction of muscle is seen in Figure 8.

DETAILS OF DESIGN

Electrical Recording is readily effected by 110-120 volt 60 cycle alternating current. If the standard ac line⁵ is used to supply a variable output transformer,⁶ one obtains the advantages (a) that neither side of the writing circuit is grounded and (b) that for unusual purposes the writing voltage can be varied. The current requirements can be easily approximated since average operating voltage is about 120 volts and each lever takes about 0.012 amps. at this voltage. Thus, forty pairs using four writing points per pair (actually our students working in groups of two never use more than three writing points) would require less than 0.25 kva. This means that groups of four students can record eight different signals at once if needed for the same current expenditure and with the same equipment.

The circuit diagram for the writing system is seen in Figure 7. It will be noted that the timing interrupter is placed in one lead of the output of the transformer. The output leads then pass to the origin of the trolley duct used for writing voltage. The individual trolleys emerge from the duct over each desk. Of the two leads from each trolley, one runs directly to the recording box as a return line from the kymograph (Fig. 7). The other lead is split into four lines in each of which a 10,000 ohm resistor is placed close to the trolley (Fig. 5). From these four resistors and the return line, three feet of five conductor cable leads to a five conductor jack at eye level above each desk. A polarized plug is inserted in this jack when the apparatus is set up. The plug is attached by five conductor cable to the electrical recording box. Figure 6 is a photograph of the box.

The return lead passes by way of a SPST toggle switch to a blue colored banana type jack which receives a blue banana plug originating on the kymograph on which writing is to be accomplished. Of the four outgoing lines from the resistors, three pass from the five conductor plug to black "Record" jacks in the recording jack box. These receive the appropriate black plugs from manometers, tambours, heart or muscle levers as needed in the given experiment. The fourth resistor line is applied through a double pole-single throw normally-open switch of the spring push-button type to a white recording jack which supplies current to a stimulus marking lever. Digital pressure on this push-button not only closes the stimulus-marking circuit but also closes the primary circuit of the inductorium. This is accomplished by including the other side of the DPST switch in the primary inductorium circuit through two green jacks. Thus, the writing on the drum is simultaneous with the stimulus. It is obvious that the color coding alone will insure proper electrical connections without knowledge of actual electrical circuit.

The potential for driving the inductorium is obtained as previously mentioned from a trolley in a second duct fed by two 6 volt storage batteries in series. The trolley over each desk is used as a source for two leads, one of which carries at the trolley a 20 ohm, wire wound, rheostat of slide type. The use of this resistor permits the shorting together of the stimulating leads at any desk without "bleeding" the batteries and failure at other desks. At eye level over the desk, the leads end in a Hubbell Twist Lok two prong jack-plug. One wire from the plug terminates in a green banana plug for insertion in the green jack of the recording box. The other wire terminates in a pin plug for insertion in right or middle binding post of the inductorium in order to obtain tetanic or single shock stimulation.

The left hand binding post of the inductorium has a permanent soldered lead

5. In areas such as our own where only 110 vdc is available, the output of a dc-ac converter of 1 kva capacity can be used.

6. One suitable example is the Variac No. 100R of General Radio Corporation, Cambridge, Mass.

which terminates in a green banana plug for completion of the inductorium-primary circuit at the recording jack box.

Lever Design: The requirements for the levers were: (1) an adequate writing point for use with electrical recording and (2) a gravitational application of the writing point to the paper. The use of the blunt end of a steel phonograph needle proved satisfactory for the first objective. It was easily kept clean with emery paper. The width and density of the line inscribed on the paper is apparently a function of the voltage passing and speed of paper rather than the shape of the writing point.

The second objective was, for economic reasons, accomplished by remodeling of existing levers rather than by building completely new levers except in the case of the stimulus and base line levers. The accompanying pictures (Figs. 1-4) will be self-explanatory if it is remembered that it is necessary to avoid electrical contact between the base stand and the writing points of the several levers. Hence, insulated supporting rods or bakelite blocks between supporting rods and writing elements are utilized. The writing points are the blunt ends of phonograph needles silver soldered to music wire levers. The music wire used is between 0.014" and 0.065" depending on the weight tolerated by the physiologic system. The fall away lever is made 3 to 5 inches long except in the case of the muscle levers where reduction of variability of overall length is required. In these cases a one and a half inch fall-away with an accessory hair spring for added pressure is utilized.

The Hg manometer is not pictured because the modification was so slight. The customary paper or film "flag" was replaced with a flag of music wire of 0.014" diameter and three inches long. The wire was hammered flat in the middle to prevent its rolling. To one end of this at right angles about 0.250" of the blunt end of a phonograph needle was fixed. This flag was suspended in the usual way on the float. The writing pressure was obtained as is customary by tension from the attaching thread of a dangling weight but in the present case the thread was replaced by three strands of fine copper wire (0.010"). The strands were suspended from a brass rod of 0.166" diameter to which was affixed the lead carrying a black banana plug. The far end of the brass rod was insulated with a micarta bakelite sleeve for attachment to the base stand. Operation was as usual, the writing voltage passing from the taut wire to the metal flag to the phono-needle.

MAINTENANCE

The tricks in operation of the electrical recording system are few and simple. It is necessary to remember that intimate contact of the back (metallized) surface of the paper with the metal kymograph drum is essential to good writing. If the paper extends beyond the edge of the drum, and if levers reach the unsupported paper, writing will be variable in density and unsatisfactory. When one is using drums which have been smoked for years, it is essential to clean the surface of the drum several times in the first month or two with emery cloth to get a clear metal surface.

Each student group should be supplied with pieces of emery paper for cleaning the writing points between recordings. The points tend to accumulate carbon rather slowly so that such polishing does not become a nuisance.

The paper forms a suitable surface for pencilled or inked notes which can be made during or after the experiment as desired. No after care for the records is required.

In practice, we have used a timing on/off ratio of 9/1. This has been satisfactory as the frequency of pulses has been chosen with due consideration for the speed of drum rotation to be employed.

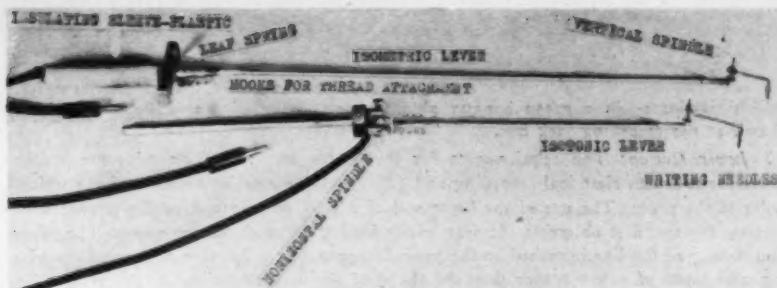


FIGURE 1.—FALL AWAY MUSCLE LEVERS.

Both show short fall away units to reduce variation in length of lever with variation of angle. In order to prevent fling away from paper a music (.014") wire spring adds to the gravitational writing pressure. Both shafts are nickel tubing 0.140" OD, 0.023" wall. Isotonic lever is 9 1/4 inches from horizontal axis to end of writing point. It is a modified Harvard Lever. Isometric lever is 15 1/2 inches from leaf spring to end of writing point.

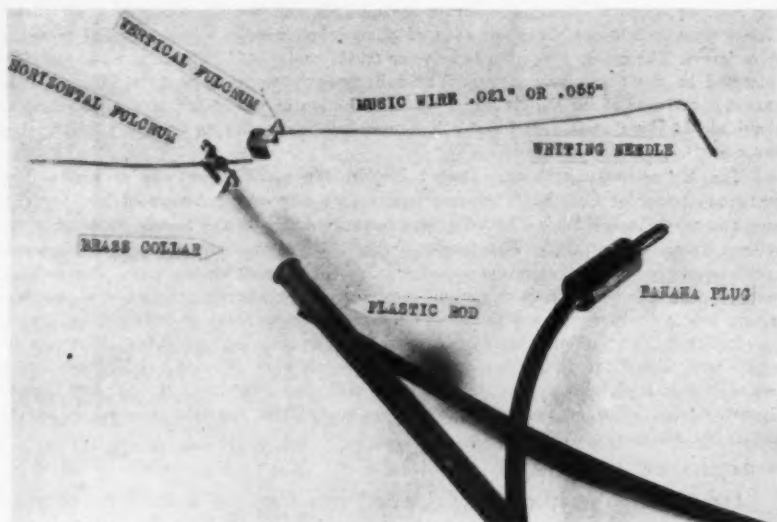


FIGURE 2.—FALL AWAY HEART LEVER.

The lever from vertical fulcrum to writing point is four inches. The horizontal fulcrum is from a Harvard Heart Lever.

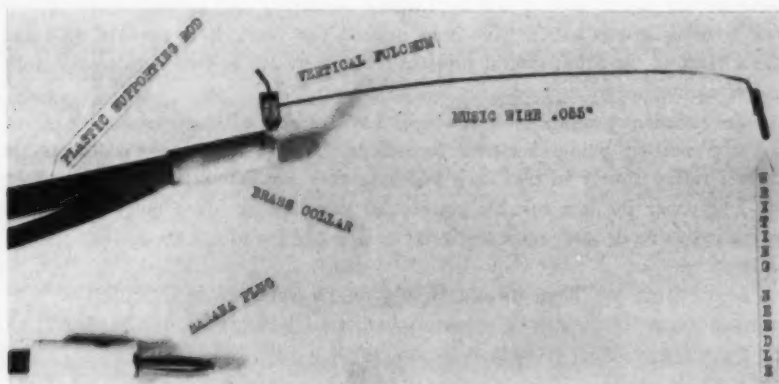


FIGURE 3.—FALL AWAY STIMULUS OR BASE LINE LEVER.

Length from vertical fulcrum to writing point is four inches. This design is also used with black banana plug as base line lever.

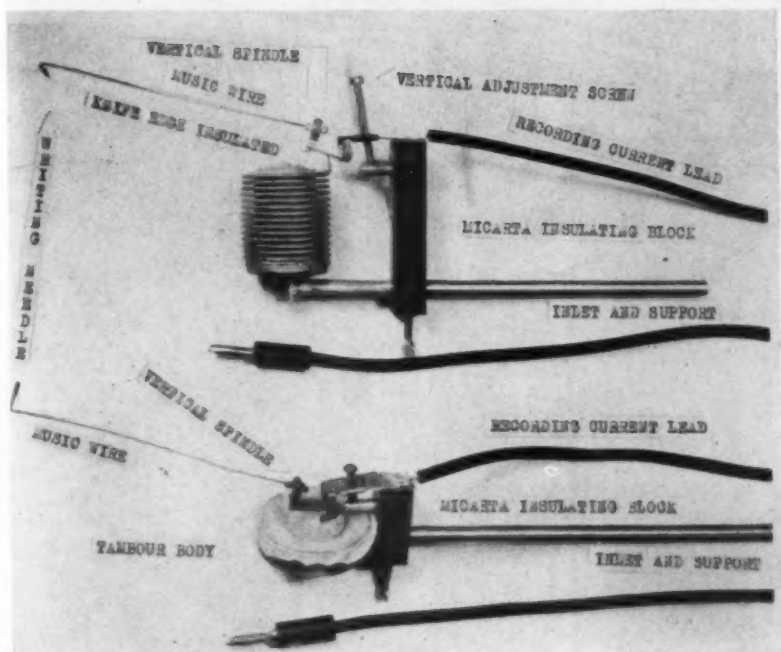


FIGURE 4.—FALL AWAY TAMBOURS.

Both are Gorrell & Gorrell units modified for electric recording. Length from vertical fulcrum to writing point is four inches.

Upper—Bellows tambour for use with pneumograph and other devices where the volume/pressure ratio is high.

Lower—Rubber membrane tambour. The body of the tambour has been filled with paraffin to reduce the volume/pressure ratio as much as possible.

DISCUSSION

The first question asked is relative to personnel being shocked in the process of electrical recording. From a practical standpoint, the answer is that neither students nor instructors have complained of shocks from the system. It is not difficult to see why: In the student laboratory arrangement where a transformer is used, neither side of the circuit (levers, kymograph return) is grounded. This means that with the toggle switch in the "on" position the experimenter could stand in a pool of water or otherwise ground himself and touch kymograph or lever without being shocked.⁷ In order to obtain a shock from the system, it is necessary to touch kymograph and lever at the same time with the toggle

7. That this is not the only reason why shocking has not occurred is shown by the research boxes now in use in our laboratory. Here, no transformer is used; the box is identical except that the house ac is led directly from wall to box, and the resistors are placed inside. Both sides of the ac line are run through a double pole single throw "on/off" toggle switch within the box. Five black "record" jacks and one white "stimulus only" jack result with the same hook up as in the student box. The grounded side of the line runs from the switch to the kymograph return jack (blue). Thus, no connection outside the box to the house wiring exists except when the toggle switch is "on." When the switch is "on" the high side of the line can only be contacted through the 10,000 ohm resistors. No complaint of shocking has been received despite use in the clinic as well as the experimental laboratory.

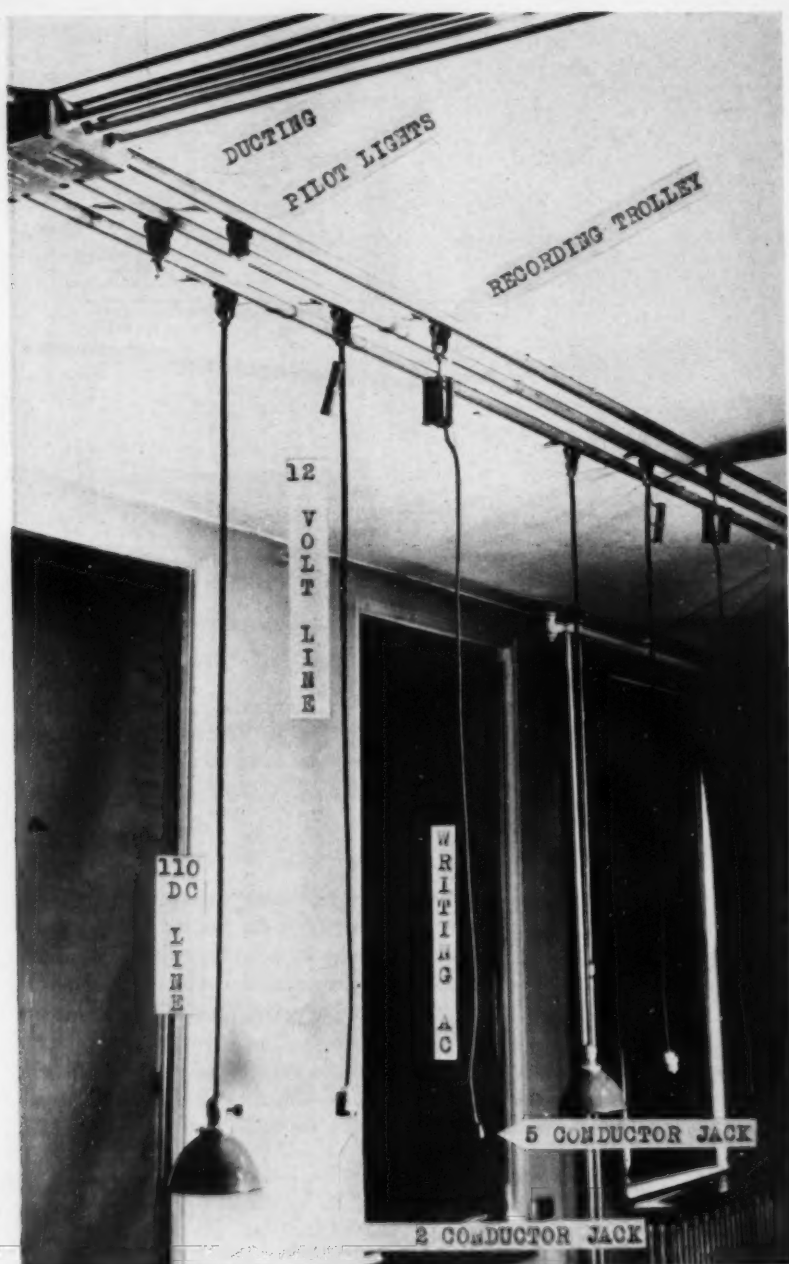


FIGURE 5.—DUCTING AND TROLLEY INSTALLATION ON CEILING OF LABORATORY. The trolleys can be slid along the duct at will. The four 10,000 ohm resistors on the recording line are supported by a nylon cord.

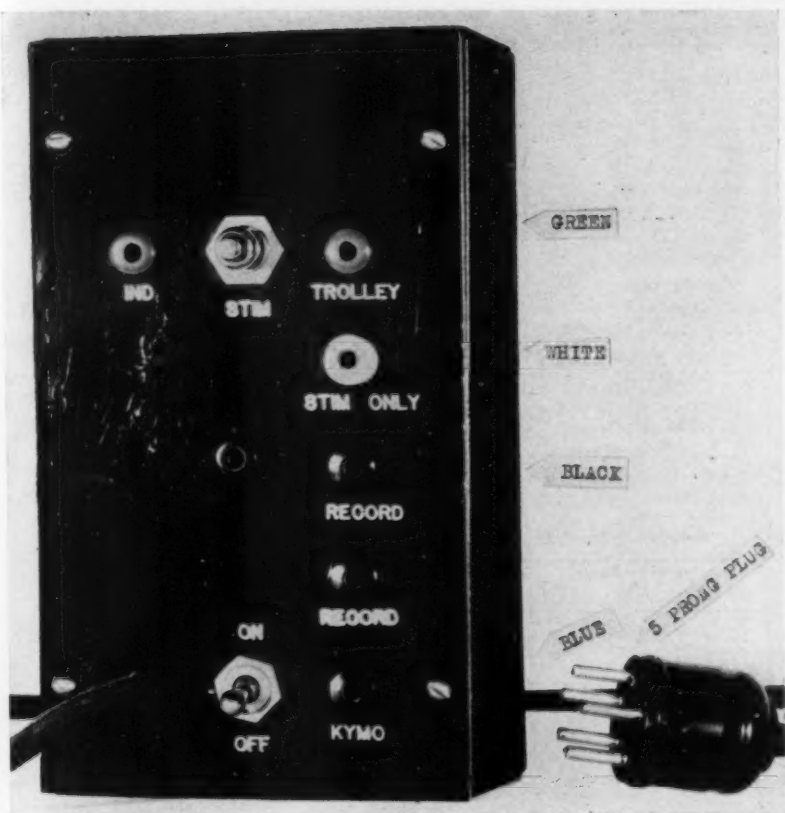


FIGURE 6.—RECORDING JACK BOX.

The 5 prong plug carries four recording lines and the common return lead. The lower switch (SPST) must be in the "on" position for recording to be possible. Depressing the upper switch (DPST) closes the circuit between the two green jacks (primary of inductorium) and simultaneously supplies recording voltage to the plug in the white jack which is otherwise dead. The black jacks provide recording voltage continuously if return is "on."

switch in the "on" position. The shock available is then limited to 12 ma at 110 volts by the resistor. In practice, touching both these items simultaneously rarely occurs since there is no use for such action. In actual use, conservation of paper and the desire to obtain a clean record make the student keep the toggle switch in the "off" position except when actually making a record. With the toggle "off" it is not possible to obtain a shock by any artifice.

Again, visitors ask about the cost of the paper. Our experience has been that \$50.00 buys an adequate supply for the use of sixty students in a full laboratory course, and leaves enough excess to supply moderate research needs.⁸

8. Actual cost slightly exceeds one cent per foot in seven inch width.

DIAGRAM OF WIRING IN THE PHYSIOLOGY-PHARMACOLOGY LABORATORY.

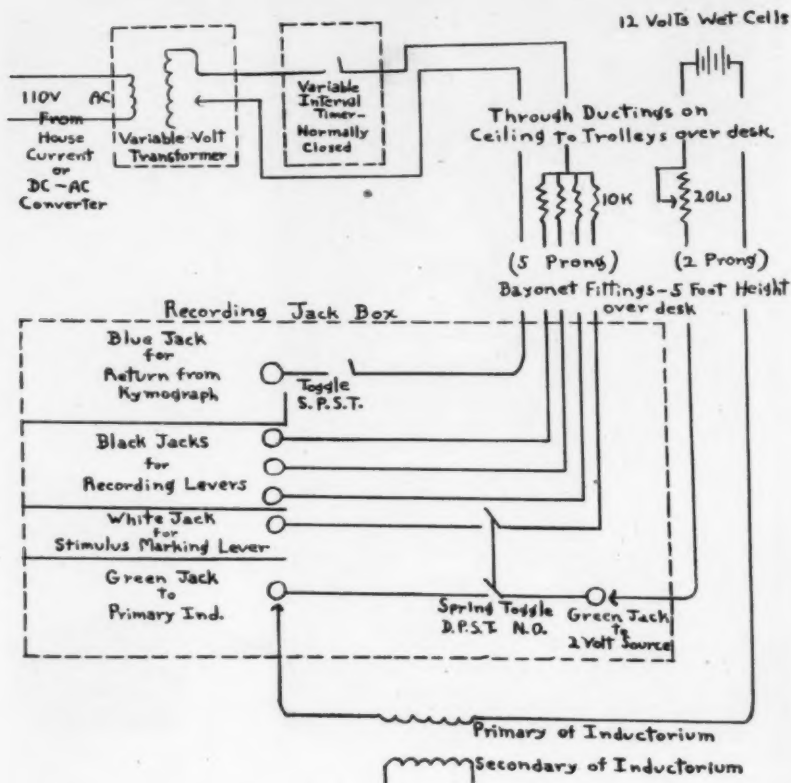


FIGURE 7.—CIRCUIT DIAGRAM.

Circuit Diagram of Student Laboratory equipped for electric recording and central supply of stimulating voltage.

It should be noted that signal magnets are not required with this type of recording. If they are desired for special purposes, modification to electric recording is simple.

The problem posed in teaching a new student to record electrically is considerably less than that with smoke and shellac because it is not necessary for him to learn the circuit and the mechanics are simpler. As with any fall away lever system, the student has to be taught to keep the line formed by the lever arm through the vertical fulcrum straight. This is quickly learned.

CONCLUSIONS

An electrical recording system has been described for use in student laboratories of physiology and pharmacology. The records are permanent as made,

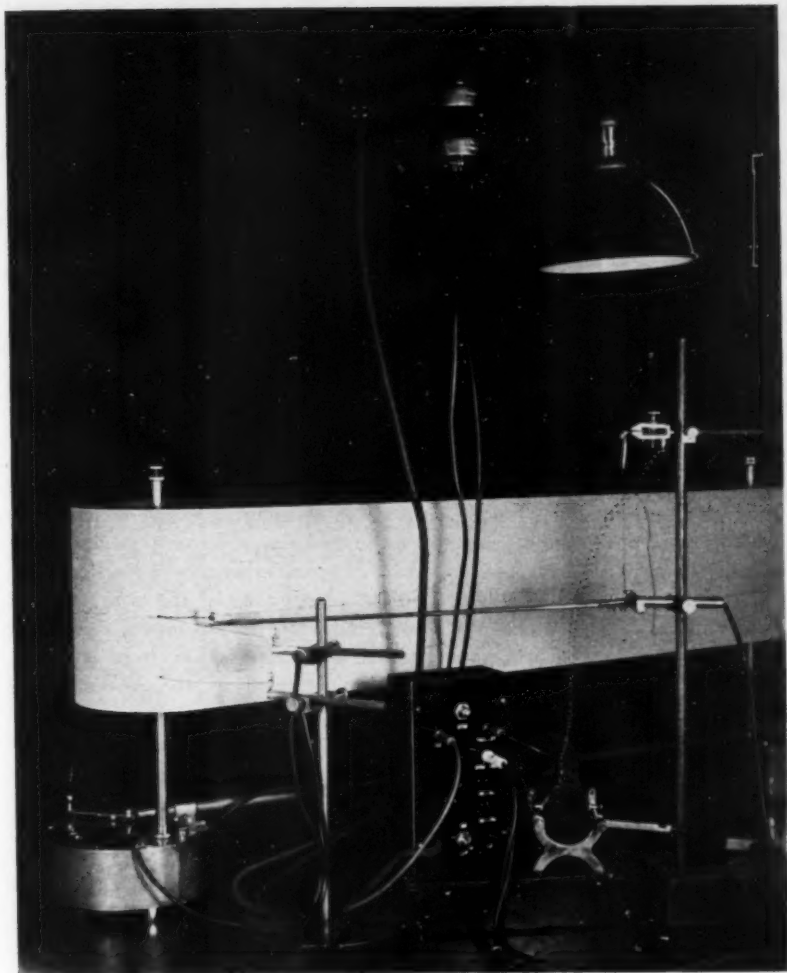


FIGURE 8.—APPARATUS FOR ISOMETRIC CONTRACTIONS OF MUSCLE USING TELEDELTO PAPER.

Note: Color coding of plugs from levers and jacks in recording box. Three levers are recording: (1) Isometric muscle lever; (2) Base line lever; (3) Stimulus lever. Return line from base of kymograph which terminates in blue plug in recording jack box. Jacks from overhead trolleys at top of picture from left to right: 5 wire recording current connector, 2 wire stimulus-current connector, 110 dc light.

can be annotated with pen or pencil during or after recording. The system virtually eliminates the wiring problem and simplifies the apparatus. It has successfully replaced the classical smoke and shellac method at Boston University School of Medicine.

The Teaching of Preventive Medicine*

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PURPOSES

I have in mind four major purposes in this discussion:

1. To compare the present status of undergraduate preventive medicine teaching in the United States and Canada with certain previous studies of the situation, and with the recommendations made intended to increase the effectiveness of such teaching.
2. To summarize reactions of students and faculty members in other departments to the preventive medicine teaching now being done.
3. To indicate important trends in the choice of subject material and in techniques of presentation.
4. To outline future needs.

Obviously these purposes are much too ambitious to achieve completely in this type of presentation. I make no pretense of being an expert in either the field of medical education generally, or in teaching preventive medicine specifically. However, I have had some years of actual experience in teaching medical students, and in 1938-1940, I visited 38 schools. In the same year, 74 schools in the United States and Canada answered questionnaires concerning preventive medicine.¹ I was also fortunate enough to be associated with Dr. H. S. Mustard, chairman of a committee appointed by the Association of American Medical Colleges, and had the opportunity, during the war, of talking with a number of persons interested in the teaching of preventive medicine in the United Kingdom. During the past year, I visited 49 schools and recently received replies to more than 70 questionnaires. The questionnaires were sent out and returned within the past few weeks in order to have at hand material to present the current picture.

For the purposes of this discussion, the term "preventive medicine" is used in an inclusive sense unless otherwise indicated. That is to say, it includes material sometimes separately referred to as public health, and might, perhaps, be considered as being used synonymously with the words "social medicine" as they are employed in the United Kingdom and in Canada.

STAGES IN PREVENTIVE MEDICINE TEACHING

There have been three developmental stages in the teaching of preventive medicine to medical students. First, the bacteriologic and sanitary advances of the past 100 years were presented. This was quite often done as a side line by the professor of bacteriology. Then, as public health advanced, many deans felt that their students should be informed of the progress under way. Local, state or Federal health officers were called on to teach, usually on a part time basis, and at small cost to the medical schools. These health officers and their

* Presented before Conference of Teachers of Preventive Medicine, University of Michigan School of Public Health, Ann Arbor, Sept. 30-Oct. 4, 1946.

bureau heads generally presented their subject in more or less technical terms, giving little thought to the fact that few medical students would become public health specialists.

In recent years, the tendency has been to recognize that most students would become practitioners of medicine, and to teach prevention, positive health, constructive medicine,² eubiotic medicine,³ social medicine,⁴ however one chooses to define it. Efforts are being made to concentrate more on a kind of teaching which students readily can see applies to their future practice. This requires full time teachers who are thoroughly informed, not only about public health and preventive medicine but the progress in medicine generally. Emphasis is being placed on the social problems which accentuate as well as cause ill health, and on the community defenses erected or needed to combat such difficulties. It is, perhaps, unfortunate that we might be misunderstood in the United States if we used the term "social medicine," first employed by Sir Wilson Jameson to describe the new teaching approach in the United Kingdom. As he said, it is a good thing to give "the child a new suit of clothes and a friendlier sort of name."⁵ Undoubtedly, social medicine very nearly describes what is being attempted, and the adoption of such a new term would also give notice that changes had been made in a teaching direction.

It is wise to point out that in duly emphasizing social factors, we must not lose sight of the importance of bacteriologic and public health advances. Problems of sanitary importance and of communicable disease control are always with us. They assumed great importance during the war (students in uniform were interested in privies and baths), and would be preeminent in atomic warfare. Public health practice is also essential knowledge for the physician. He must know where he fits into the picture; what the health department can do for his patients; and what are his community responsibilities. He should be better prepared than the grocer, minister, or school teacher, to judge whether or not his health department is doing a good job.

THE MUSTARD COMMITTEE REPORT

In October, 1944, a committee of the Association of American Medical Colleges, with Dr. Harry S. Mustard as chairman, reported to the Association,⁶ making recommendations on the undergraduate teaching of preventive medicine and public health. The report was based on nearly five years of study, including replies to questionnaires, visits to medical schools, conferences and correspondence with those concerned, including members of the Committee on Professional Education of the American Public Health Association, and study of catalogues.

A great diversity of opinion was uncovered as to how and by whom the subject matter under discussion should be taught, and considerable confusion concerning nomenclature. A comparatively new undertaking, the teaching in preventive medicine had been faced with an already overcrowded curriculum and was often allotted undesirable hours. Professed interest on the part of deans did not seem to be borne out by their support. Tremendous variation in courses was partly due to the accessibility of health agencies, community

resources in teachers, the number of students to be taught, and the attitude of the general faculty. Some of the variation was unquestionably due to lack of understanding of major objectives. At one point, students were trained as if they were to be future health officers. Another school taught on a strictly clinical basis, with little thought of preparing students to cope with the complex modern society which was to be the setting of their practice.

Few schools began preventive medicine teaching before the third year and a number had no instruction until the senior year. By this time, student interest had become so focussed on clinical material that it was almost impossible to develop a true concern for preventive measures.

The Committee made various recommendations which were accepted by the Executive Council of the Association and approved for publication. A separate department with a full time head, supported by a budget comprising from 5 to 8 per cent of the total medical teaching expenditure was set forth as a major requirement. Four per cent of the total curricular time, or about 160 clock hours, was considered essential for the course, which should begin not later than the second year and be included in each year thereafter. The need for elasticity of teaching program to provide room for experimentation was fully realized. However, certain basic concepts must be taught.

The student must be introduced to the principles of statistics and must have "an understanding of the natural history of disease and a concept of disease as a mass problem." He needs "to be generally informed as to the environment in which man lives; biological, physical, economic, social." And he should be possessed of knowledge and skills "believed to contribute to the maintenance of health and the prevention of disease in the individual and family." The possibilities of health education by physicians and by community agencies are essential information for students; as is a knowledge of available (and needed) community resources and the legal obligations of the practitioner to the official health agencies.

Contributions to preventive teaching should be made by all departments of the school. To assist in closest integration with clinical teaching, the greater part of the instructional staff in preventive medicine should be given hospital and clinic appointments. Carefully planned fellowships are needed to train future teachers and research workers. These fellows must be selected with due regard for the exceptional personality and leadership qualities essential if the preventive medicine faculty is to achieve a respected status in the schools.

The Committee expressed its conviction that seminars, student presentation of cases and situations, and field observations are much more valuable teaching techniques than lectures. Industrial hygiene, sanitation, parasitology, public health administration and related subjects were considered as additions to the basic instruction. Such additional subjects should consume not more than one-fourth the time allotted to preventive medicine.

Undoubtedly this report has already influenced the situation materially. Almost no radical differences of opinion have been expressed. But a very great

deal still remains to be done to implement fully all the Committee recommendations.

BRITISH RECOMMENDATIONS

During recent years British thought has devoted itself to the problems of what is becoming known there as social medicine. The general ideas are well summarized in the Goodenough report⁷ and in a series of reports by the Committee on Social and Preventive Medicine of the Royal College of Physicians, London.⁸

Social medicine includes the more restricted, though very important, subject of disease prevention. It also signifies a particular conception of medicine; a conception that regards the promotion of health as the primary duty of the doctor, that pays heed to man's social environment and heredity as they affect health, and that recognizes that personal problems of health and sickness may have communal as well as individual aspects.

Social medicine must be the background of both preventive and curative medicine.

In Britain there is no longer a necessity for detailed instruction in environmental hygiene which existed when there were many part time medical officers of health. There is, however,

growing support for the view that a general practitioner should become the health advisor of his patients and their families, and should participate to a greater extent in the conduct of the health services of the country.

With the idea of realizing these aims, certain general principles were enunciated. Teaching in social medicine must permeate the whole of the curriculum, even if it means a new orientation of medical education and changes in the methods and outlook of most of the teachers. A foundation should be laid during the time when anatomy and physiology are being taught, since the student can be interested easily in the fundamental importance of health and prevention of disease at such a time. During the clinical period, social medicine must be taught so that by studying the patient's life as a whole, students may find reasons for his illness and perhaps the key to the restoration of his health. To make this type of teaching most effective students must see

their teachers enlisting the help of almoners (social workers), psychiatric social workers, health visitors (public health nurses), and other welfare workers, and considering clinical problems against the background of the patient's domestic circumstances and environment.

Teaching should be securely founded on the basic sciences and should include the following:

1. Personal, industrial and social factors which contribute to causation of human disease.
2. Organization and work of public and voluntary agencies seeking to counteract the effects of such causal factors.
3. Training in social investigations, which will require extension in the activities of social workers and considerable increase in their numbers, as they will carry an important part of the teaching load.

Considerably more statistical training will be required and student health services should be utilized as teaching media. The importance of the health center in connection with teaching students is also clearly recognized in the

United Kingdom. There must be practical knowledge of housing conditions and their effects on health, and of the problems of industrial medicine. A separate department in every medical school is recommended, staffed with carefully trained teachers. The difficulty of obtaining such teachers is fully appreciated, and their immediate production in adequate numbers is scarcely expected. However, several chairs of social medicine have already been developed and there is a very definite stir of activity in this field at present. Thus, it is apparent that thinking is very similar on both sides of the Atlantic.

PRESENT SITUATION

Let us now discuss the present situation in North America as revealed partly from the recent questionnaires which most of you answered so carefully and promptly. (Appendix A.)

Title of Department Teaching Preventive Medicine.—Departmental titles are obviously of secondary importance compared with what is taught. However, titles do indicate how medical faculties are thinking. During the past six years such words as preventive medicine, public health or hygiene are being used more and more. There are now only eleven schools which fail completely to mention the subject in naming their departments, contrasted with seventeen in 1940. Moreover, only seventeen schools now include bacteriology or pathology, compared to twenty-five which did so six years ago. Fifty-nine departmental titles now refer only to preventive medicine as defined for purposes of this discussion, which is fifteen more than in 1940.

TABLE 1.—TITLE OF MEDICAL SCHOOL DEPARTMENTS TEACHING PREVENTIVE MEDICINE IN CANADA AND THE UNITED STATES.
(2 Year Schools Included)

	1940	1946
A. Title involving only preventive medicine, public health, hygiene, or social medicine	44	59
B. Title including bacteriology in addition to preventive medicine, etc.	19	15
C. Title including pathology in addition to preventive medicine, etc.	6	2
D. No mention of preventive medicine, etc., in title	17	11
Total	86	87

Preventive Medicine Course.—The distribution of teaching throughout the four years of medical school is better now than it was in 1940. The median number of clock hours devoted to preventive medicine has increased, however, only from 95 to 100; the mean from 94.1 in 1940 to 103.8 in 1946. More striking improvement is shown in the number of schools which have increased their teaching hours above 150, which is just slightly under the recommended 4 per cent. There were two schools with more than 150 hours in 1940; now there are thirteen.

Distribution of subject matter requires explanation. Though 47 schools report some teaching of biostatistics, only 16 gave 10 hours or more, which is probably a bare minimum to permit any discussion of biometry. Only 20 schools reported devoting 6 hours or more to social and environmental factors. One could hardly expect to present case studies adequately in less time than this. Medical care economics is up for special consideration during this Conference, and, perhaps, it is just as well. Of 49 schools checked on this point, 22 reported

no time at all devoted to the subject; the median number of hours was 1.5 and the mean 3.9. Only 16 schools reported spending 6 or more hours on this major problem.

More than one-half the available time is devoted to lectures, which leaves plenty of room for improvement. Increase in budgets has been rather marked. The mean budget available for preventive medicine has increased from \$9,880.92 in 1940 to \$15,662.46 for 1946, and for the same years, the median has increased from \$5,700 to \$9,225. The range of expenditures extended from zero to \$40,000 in 1940 and from zero to \$80,000 in 1945. It is interesting to note that of the schools which gave information on budgets for both years, only 7 show a decrease, whereas 22 schools indicate a substantial increase in the amount of budget used for preventive medicine teaching.

Reactions to Preventive Medicine Teaching (Appendix B.).—Some schools are making formal attempts to determine student reactions by using unsigned questionnaires and other methods. One professor has a student committee which discusses the teaching with him at the end of the course and assists materially in pointing out strengths and weaknesses. There is fairly general agreement that preventive medicine is by no means the most popular course in medical schools. In many cases the interest, if any, is rather passive. A number of schools speak of the situation as improving. The overall picture indicates that the reaction is just about fair.

The principal items which fail to arouse interest are statistics, public health administration and environmental sanitation. Lectures are generally unpopular, and the unfortunate hours at which classes are often scheduled have caused quite unfavorable comment. Students, in some cases, have detected the inadequacy of curriculum planning and pointed out repetitions of material covered elsewhere in preventive medicine courses.

The points which evoked most favorable reactions are the clinical and practical aspects of preventive medicine as they apply to the work of practitioners; social and economic factors, particularly as brought out by the case study technique. Epidemiology and communicable disease control are usually popular and in many cases field trips are appreciated. Teaching by small groups as in seminars is definitely much more effective. Some schools have reported that the students enjoy making sanitary surveys.

The Association of Interns and Medical Students⁹ tabulated replies to 1,100 questionnaires designed to learn of student reactions to present day teaching. Greater emphasis in premedical courses on the humanities was suggested by 49 per cent. During the medical course less emphasis on public health was suggested by 28 per cent and less in embryology by 29 per cent; these subjects were at the top of the "de-emphasis" group. Among subjects suggested for increased emphasis were medical social economics.

As to methods of teaching, 42.3 per cent thought that lectures should be decreased, whereas 75.3 per cent suggested an increased emphasis on seminars and conferences.

It is evident that where students have opportunities definitely to participate

in discussions and to work with patients the teaching is much more effective.

A certain school has made tabulations of student reactions over a five year period. They tend to confirm the general experience. (Appendix B.)

We should not teach as if we were running a night club and had entertainment as our prime objective. Certain subjects, such as statistics, are essential and must be taught even though students may not be vitally interested at the time. On the other hand, we ought to note students' reactions and do everything within reason to arouse interest and enthusiasm because education thrives in such an atmosphere.

Cooperation of Other Medical School Departments.—A very few departments of preventive medicine spoke of little or no cooperation. On the other hand, only a relatively small number described the cooperation of other medical school departments as excellent. Those most frequently singled out for mention as quite cooperative were pediatrics, medicine, obstetrics, gynecology, bacteriology and psychiatry. In a number of instances, the condition was described as "passive" cooperation, or "inertia." Several schools pointed out that with a larger preventive medicine staff and more funds it would be possible to have more frequent meetings and conferences with other departments and, therefore, to familiarize them with the preventive program. Some schools have found that cooperation varies directly with such familiarity and understanding. Difficulties arise where the clinicians are on a part time basis, and in some cases because

TABLE 2.—CONNECTION BETWEEN DEPARTMENT OF PREVENTIVE MEDICINE AND STUDENT HEALTH SERVICES.

Type of Connection	Number of Schools
No connection	22
No connection, but contemplated soon	6
Advisory and consultative	7
Joint appointment—Preventive Medicine—Student Health	5
Medicine and Preventive Medicine jointly responsible	1
Preventive Medicine performs laboratory work	2
Preventive Medicine faculty member on coordinating or supervisory committee for Student Health Service	2
Equivocal answer	5
	50

programs are directly blocked by a single powerful faculty member. Where there has been a good preventive medicine program over a number of years, cooperation develops as an evolutionary measure. Naturally, it is particularly fostered where the department of preventive medicine is able to demonstrate that it really can be of service to other divisions of the school. As an example, since the Vanderbilt Department of Preventive Medicine took over administrative operation of the prenatal clinic and provided a public health nurse for instruction and follow-up of patients, the Obstetrical Department has responded warmly. Where there is no hospital or clinic responsibility for preventive medicine staffs, it is much more difficult to secure cooperation. Adequate faculty representation for preventive medicine and strong administrative backing by the dean are both essential.

Student Health Service.—Replies concerning student health service were received from 61 schools. A Student Health Service was reported in 50 of these schools, and in 43 of the associated universities.

Hopkins, Vanderbilt, McGill, Iowa, Meharry, Stanford, Tulane, and Utah are among those reporting interesting experiments of varying types. There is already sufficient experience to demonstrate that the student health service has real possibilities for teaching. Raymond B. Allen said recently:

Periodic health examinations of students help to teach preventive medicine. Besides protecting the health of students, the health service can serve the desirable educational objectives of being a day-to-day demonstration of how a doctor's office should be run. Senior students should serve part of a clinical clerkship as assistants to the school health officer.²⁰

Much more should be done to use the valuable material so close at hand.

TRENDS

Certain trends in teaching preventive medicine are making themselves felt.

1. *Emphasis on the social factors in medicine is being increased with a corresponding reduction in time devoted to consideration of public health.*—Social workers are being increasingly utilized to assist in teaching. At Yale, the head of the New Haven Hospital Department of Social Service has been given the title of Clinical Professor of the Social Aspects of Medicine. A report on a study of thirteen schools is expected soon from a joint committee on the teaching of social and environmental factors in medicine. The committee is composed of representatives of the Association of American Medical Colleges and the American Association of Medical Social Workers. No doubt this report will indicate that socio-environmental case studies are not the sole property of preventive medicine departments, but that they are being used to good effect by teachers of medicine and psychiatry as well. The usefulness of long term follow-up studies will also probably be pointed out. Greater attention is being devoted to consideration of contributions, actual and potential, of community health and welfare agencies.

Even though public health teaching has been reduced there is evidence of improved collaboration with health departments in communities where medical schools are located. Several schools have been provided with health centers in which prolonged clerkships may be made available so that students can understand the operations of a district health department. The contributions of these centers to preventive medicine teaching have been enormous. It is quite possible that the general conception of a health center may require reorientation as medical care programs change and group practice centering around medical schools develops. Future centers may require facilities for coordinating medical care with what are at present considered the usual preventive health services for individuals.

2. *Work with patients is increasing in preventive medicine courses.*—In certain schools preventive medicine ward rounds have been developed and are proving effective, generally. This type of teaching requires, of course, that members of the preventive medicine staff have hospital and clinic appointments. A few schools, as part of the preventive medicine instruction, provide opportunities for students to become familiar with the technique of periodic health examinations. This type of examination has often been considered a fundamental cornerstone of preventive medicine service. However, there is a division of opinion at present, not only as to the technique, but also the value of such examina-

tions. Opportunities* for further study exist and should be followed up. One judges that existing apathy concerning the possibility of utilizing student health services in teaching preventive medicine may soon be dissipated.

In the work with health departments, field visits with public health nurses and with epidemiologists to homes of patients are generally proving useful and appreciated by students.

3. *Cooperation with other departments of the medical school is improving.*—Preventive medicine teachers are learning that the process is necessarily evolutionary and that it takes a good deal of time and personal education to enlist active cooperation from other members of the faculty. Joint clinics are used effectively in some schools, and in the socio-economic case discussions representatives of other departments are frequently asked to attend. In many cases, the invitations are accepted. A few schools have realized that the cooperation of other departments may be improved by representatives of preventive medicine actually assisting their faculty associates in carrying certain parts of their load. Interdepartmental appointments is another device which seems destined for increasing usefulness.

4. *The seminar and conference technique is replacing lectures.*—While dissatisfaction with lectures is fairly general, there are numerous administrative and financial problems involved in splitting up large classes into smaller groups even though one may realize completely that such is the desirable objective. Lack of funds, available personnel and suitable conference rooms create obstacles. A few schools are finding that resources for additional teachers exist in the local health departments. Such resources must be tapped with some degree of caution, otherwise the desirable emphasis on preventive medicine may be obscured by the immersion of public health workers in their regular day-to-day health department activities.

5. *Industrial Medicine.*—It is perhaps fair to say that teaching in industrial medicine is receiving increased emphasis. A few schools are considering the development of separate departments or subdepartments of industrial medicine in addition to the two or three now existing. This may or may not be a good thing as a separate department may not be easy to coordinate with other preventive medicine activities.

6. *Biostatistics.*—The time is ripe for the introduction of courses in biostatistics in a number of medical schools now lacking such instruction. Statistical teaching is becoming appreciated more definitely by other medical school departments, especially pharmacology and physiology. In the absence of other instructors available to teach the subject, the duty will probably fall on departments of preventive medicine. The necessary length of time required to teach the subject adequately for medical students has not yet been finally established.

7. *Medical Care.*—Medical students should have some background in the social and economic problems concerned with the distribution of medical care. Because departments of preventive medicine are presumed to have an interest in the community as a whole and because of their familiarity with community

organizations, these departments seem logical ones to assume responsibility for teaching in this field. The survey recently completed indicates that comparatively little is being done at present in most schools.

8. *Sanitary Surveys.*—A few schools are still using the sanitary survey of the type first developed by Rosenau at Harvard. Others are using a similar technique but applying it to a study of the medical care facilities available in a given community, which is a more useful technique for medical students.

9. *Field Work.*—Disagreement is widespread concerning the place of field work in a preventive medicine curriculum, particularly as it applies to visits to pasteurization plants, water purification establishments and so forth. Some consider this method of instruction extremely valuable and say the students appreciate it. Others regard the field trip as a waste of time. One professor has reported that when a trip to an industrial plant was planned only about one-half of the students reported. While they were going through the plant many of them paid a good deal more attention than seemed proper to certain of the female workers. One student made a date with one of the girls in the factory and a week later turned up with a case of acute gonorrhea. Since then, this particular professor has had little use for the field trip!

If field trips are to be effective they must be conducted with small groups of students. Careful arrangements and excellent organization are necessary to produce good results. Ordinarily, a representative of the medical school must be on hand to be certain that students do not get bogged down in a mass of technical detail.

10. *Visual Aids.*—War experience of both the Army and Navy has served to re-focus attention on the importance of visual aids in educational work. A special committee of the Conference of Teachers of Preventive Medicine has concerned itself with the place of motion pictures, and a wealth of useful material has been assembled so far. There seems little doubt that many teachers would like to have better and more films than are now available, particularly in the field of sanitation with the idea, perhaps, of replacing certain of the field trips now scheduled; but means of producing such films remain to be worked out. There is a good deal of feeling that movies are somewhat tyrannical since they allow very little room for flexibility. The possibility of utilizing film strips, slides, working models, etc., more widely requires additional exploration. One final comment on trends. A relatively small number of schools are leading the way. A great many more have permitted themselves to fall very far behind.

NEEDS

1. *Uniformity in Objectives.*—We may reasonably hope that this Conference will aid us in arriving at a clear conception of what our objectives should be. There will be no occasion for concern if methods used to reach the goal are flexible, nor if they show considerable variation under the widely differing circumstances existing in the various schools.

2. *Should there be a separate Department of Preventive Medicine?*—Ideas of departmentalization of the medical faculty are undergoing certain changes

due to thinking on curriculum planning now going on in many parts of the world. Should the whole medical school curriculum be so oriented that strict departmentalization serves as a hindrance rather than a help, certainly advocates of preventive medicine would not wish to oppose such an idea by insisting on a separate department. On the other hand, practically everyone considers it essential to have someone on the medical school faculty whose primary duty is to coordinate the preventive medicine teaching. Such a person or team must have strong administrative backing from the dean and the university to accomplish this most difficult objective. He will need faculty status co-equal with that of those teachers representing the other major disciplines in the school.

3. *Teachers of preventive medicine.*—Since it is going to be a most difficult task to carry out the objectives on which we hope this group will agree, it is obvious that teachers of very unusual capacity will be required. One may agree with the Social and Preventive Medicine Committee of the Royal College of Physicians of London⁸ that:

It is largely a matter of personality, and the holder of a University Chair in this subject should have, above all, a wide and burning interest in humanity. He will need originality of mind, a gift of lucid expression, a facility for making easy social contacts and the ability to think freshly on the many new problems that will arise.

In addition to the qualities of personality and leadership, desirable teachers should have some familiarity with the social sciences; they should be medical graduates and have completed internship in an approved hospital. Clinical training in medicine or pediatrics is obviously desirable since these teachers will be working closely with the clinical faculty of the school. Experience in private practice would be useful to familiarize them with the problems of the private practitioner. As they will be responsible for providing students with a grasp of public-health and its problems, they should have a public health degree and some experience, if possible, in actual public health field work. Knowledge of the economic and social backgrounds of problems in the distribution and payment for medical care is essential. The principles and application of health education and community organization are additional requisites and the type of teachers needed must have some training and interest in research to maintain the subject on a vital basis.

It is unlikely that such teachers will simply grow like Topsy. There is undoubtedly need for a broad and rather generous fellowship program so that persons who wish to equip themselves for academic positions will be able financially to take the necessary training.

In considering the teaching staff one should not lose sight of the importance of medical social workers, and members of health department staffs in the community.

4. *Hours.*—There should be insistence on sufficient time to present preventive medicine effectively. However, we must be sure that the time allotted is used to best advantage; certainly it is most unfortunate to have the students wonder, as some do, why preventive medicine had been allotted so many hours.

5. *Budget.*—Sufficient funds obviously are required to do our job effectively.

Again we must be sure that the funds we have are used economically and to the best advantage. It would be unfortunate to have other medical school departments questioning the desirability of maintaining preventive medicine on a luxurious basis.

6. *Permeation of the Curriculum.*—This must become something more than a mere catchword. When we recall how the sanitary engineer uses a very small quantity of chlorine in large amounts of drinking water, we may, perhaps, realize that a little permeation can go a long way, provided it gets in the proper channel. We do need every possible opportunity to show the students where they fit into the general preventive and public health program; or better, they need to be given opportunities to show themselves.

7. *Research.*—We need more information about the value and use of periodic examinations. What constitutes a proper preventive program for the individual? How can student health services best be used in teaching? What constitutes adequate medical care? What can we expect from geriatrics? How can our teaching methods be improved? What use can be made of visual education techniques? These are but a few of the many problems in the field of preventive medicine teaching which require elucidation.

I should like to quote again from Dr. Allen's excellent recent book on medical education.¹⁰

... almost all of the content of the premedical and medical curricula is concerned with training in the more or less narrow technical and scientific fields leading ultimately to competence in diagnostic and curative medicine. Most of such training is essential to the education of a physician, but ways and means must be found to liberalize premedical and medical education if medicine is to fulfill its inherent promise of contributing to the building of a healthier world.

This promise lies largely in the direction of preventive medicine and has been seen clearly by some people for many years. Much progress has been made toward creating those conditions of housing, working, nutrition, and specific health and safety services which prevent at their sources the causes of many diseases. Although individuals in the profession have exercised important leadership in their communities in full cooperation with other public-spirited citizens, and although physicians have rendered expert technical and professional services of value to society, physicians as a group appear to have been too preoccupied, too busy, or possibly lacking in sufficient educational preparation to approach with any vigor or social insight the broader problems of creating those conditions within which people may enjoy the benefits of truly healthful living. This is a serious indictment of premedical and medical education for which the colleges of liberal arts and sciences cannot be held wholly accountable.

Medicine . . . must add to itself as required studies pertinent phases of the disciplines of the social sciences and the humanities.

Dr. Sigerist has also recently said:¹¹

The barriers between preventive and curative medicine must be broken down. This cannot be achieved by adding a few courses to the curriculum. A new attitude must be developed. The student must become interested in health, not only in disease. Clinical medicine must be taught differently than heretofore. Every case must be analyzed medically and socially as to the factors that have made it possible, and conclusions must be drawn how to prevent similar cases in the future. Since the physician will have to cooperate very closely with public health officers he must be familiar with the elementary tasks of public health. And so we actually begin to see the outlines of a new physician. Scientist and social worker, ready to cooperate in teamwork, in close touch with the people he disinterestedly serves, a friend and leader, he directs all his efforts toward the prevention of disease and

becomes a therapist where prevention has broken down—the social physician protecting the people and guiding them to a healthier and happier life.

May this Conference prove an inspiration to all of us, so that we may go back and do more effective jobs than ever before.

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APPENDIX A.

YEAR OF MEDICAL SCHOOL IN WHICH PREVENTIVE MEDICINE IS TAUGHT.*

United States and Canada—1940 and 1946
(2-year schools excluded)

Year	Number of Schools Teaching Preventive Medicine		Hours Devoted to Preventive Medicine (1946 only)	
	1940	1946	Mean	Median
1st	8	17	23.5	20
2nd	40	54	47.3	36
3rd	53	63	46.0	40
4th	46	53	49.8	36

* 79 schools.

METHOD OF INSTRUCTION IN PREVENTIVE MEDICINE.*

United States and Canada—1940 and 1946
(2-year schools excluded)

Method of Instruction	Number of Schools Using Given Method	Hours Devoted to Teaching by Given Method	Percentage of Total Teaching Hours	
			1940	1946
Lecture	64	3,685	53.7	51.7
Conference or Seminar	33	1,050	11.2	14.7
Laboratory	24	749	8.2	10.5
Field Work	53	1,642	26.9	23.1
Total		7,126	100.0	100.0

* 64 schools replied to questionnaire on this point with answers which could be tabulated.

BUDGET FOR TEACHING PREVENTIVE MEDICINE.

United States and Canada—1940 and 1946
(2-year schools included)

	1940*	1943	1946†
Preventive Medicine:			
Mean	\$ 9,881		\$15,655
Median	5,700		9,225
Range	0-\$40,000		0-\$80,000
U. S. Medical Schools:			
Mean		\$374,444‡	
Median		291,960	

* 39 schools replied with answers which could be tabulated in 1940.

† 60 schools replied with answers which could be tabulated in 1946.

‡ The mean of the 1940 and 1946 mean budgets for teaching preventive medicine amounts to 3.4% of the mean budget for U. S. medical schools in 1943.

CLOCK HOURS DEVOTED TO PREVENTIVE MEDICINE TEACHING.*

United States and Canada—1940 and 1946
(2-year schools excluded)

Number of Clock Hours	Number of Schools	
	1940	1946
0—25	8	2
26—50	7	7
51—75	19	13
76—100	15	15
101—125	14	13
126—150	12	14
151—175	2	13
200 and over	1	2
Total	73	79
Mean	94.1	107.5
Median	95	110
Range	11—211	22—216

* 79 schools.

DISTRIBUTION OF SUBJECT MATTER IN PREVENTIVE MEDICINE.*

United States and Canada—2-year Schools Omitted.

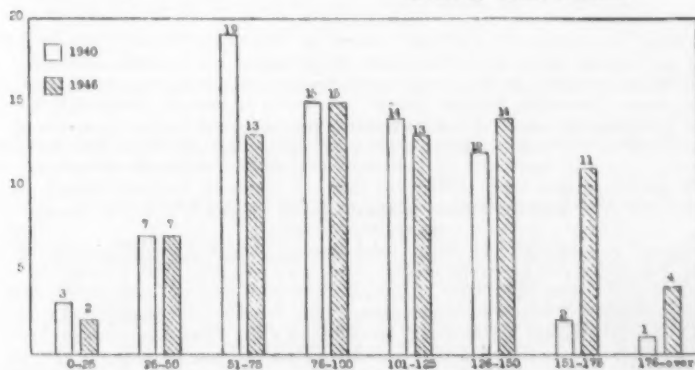
Subject	Year in Medical School					Range	Hours Median
	1st	2nd	3rd	4th	Any Year		
Biostatistics	13	24	17	7	56	1-48	5.5
Epidemiology	0	29	32	17	61	1-61	15
Environmental Sanitation	1	32	23	7	56	2-48	8
Public Health Administration	2	19	27	17	54	1-20	6
"Preventive Medicine" (in relation to work of private practitioner)	2	12	25	28	52	2-79	16
Economic and Sociologic Aspects of Disease and Health (especially Social and Environmental Case Studies)	0	10	20	16	39	1-32	6
Medical Care Economics	0	6	13	16	30	1-24	6
Industrial Health	0	15	31	16	57	1-36	7
Field Work							
Modified Clinical Clerkships	0	3	8	11	22	2-132	24
Visits to Health Depts., Pasteurization Plant, etc.	1	14	21	17	46	4-52	12

* 68 schools replied to questionnaire on this subject. A few answers could not be tabulated satisfactorily.

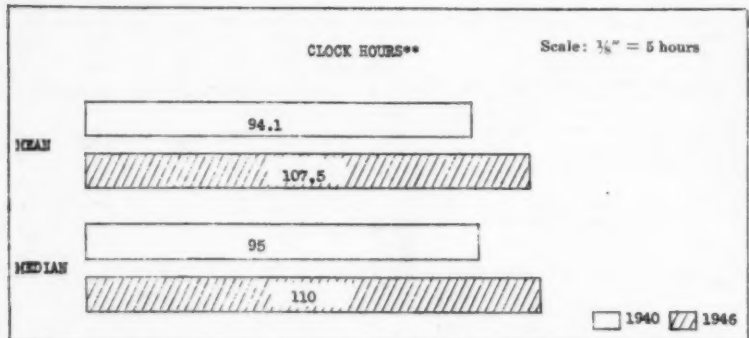
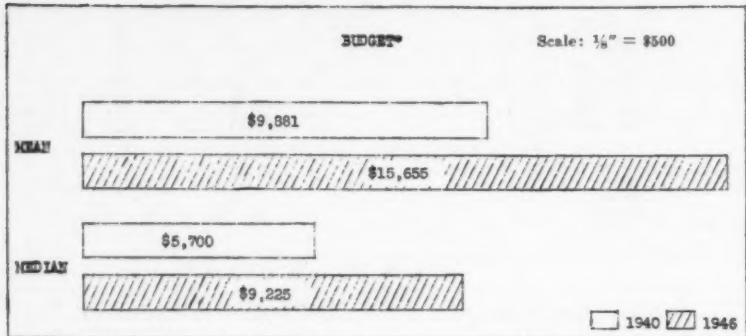
CLOCK HOURS DEVOTED TO PREVENTIVE MEDICINE TEACHING.

UNITED STATES AND CANADA 1940 AND 1946.

(2-year schools excluded)

Scale: $\frac{1}{2}$ " equals 5 schools

BUDGET AND CLOCK HOURS DEVOTED TO PREVENTIVE MEDICINE.
UNITED STATES AND CANADA 1940 AND 1946.
 (2-year schools not included)



* In 1940, 39 schools replied to a questionnaire on this point, whereas in 1946, 60 schools gave answers which could be tabulated.

** In 1940, data from 73 schools were used in obtaining these figures; in 1946, 79 schools were used.

APPENDIX B.

STUDENT REACTIONS TO VARIOUS PHASES OF PREVENTIVE MEDICINE COURSE.

In one medical school student comments on the course are available over a five year period. While the methods of analysis are subject to some criticism, certain conclusions may be drawn concerning "student appeal" of various sections of the course.

In this particular school, in addition to the 3rd year course upon which this analysis is based, biostatistics was given in the 1st year, use of the periodic health examination in the 3rd year, and social and environmental case studies in the 4th year.

JUNIOR PUBLIC HEALTH CLASS—FIELD WORK

Type of Field Work	Student Questionnaires*					Adjusted Score†
	1940	1941	1942	1942-'43	1943	
1. Water Purification Plant	2	1	....	2	1	1.5
2. Pasteurization Plant	3	3	2	3	2	2.6
3. Public Health Nursing	4	4	1	4	3	3.2
4. Military Sanitation .....	....	....	....	1	9	5.0
5. Sight-Saving Class .....	....	....	5	....	....	5.0
6. Dairy Farm	1	5	8	9	....	5.75
7. Epidemiology .....	....	9	7	5	6	6.75
8. Slaughter House	9	6	....	6	....	7.0

Type of Field Work	1940	Rank by Years†				Adjusted Score‡
		1941	1942	1942-43	1943	
9. Venereal Disease Control	6	2	11	13	4	7.3
10. State Health Department	5	—	6	8	10	7.55
11. Seminar-Personal Health	7	8	—	—	—	7.5
12. Sanitary Inspection	11	7	4	12	5	7.5
13. Nutrition	—	—	8	10	11	8.0
14. Vital Statistics	12	—	9	7	7	8.75
15. Industrial Health	8	—	10	11	8	9.35
16. Social Service	10	10	—	—	—	10.0
17. Community Chest Agencies	13	—	—	—	—	13.0

JUNIOR PUBLIC HEALTH CLASS—LECTURES.

Student Questionnaires*

Lecture Subject	1940	Rank by Years†				Adjusted Score‡
		1941	1942	1942-43	1943	
1. Communicable Disease Control	2	4	1	—	—	2.33
2. Diphtheria	3	1	6	7	4	4.2
3. Tuberculosis	11	2	3	13	1	6.0
4. Meningococcus Meningitis	—	—	—	—	6	6.0
5. Scarlet Fever	8	5	11	6	2	6.4
6. Water Purification	12	9	8	1	3	6.5
7. Measles—Whooping Cough	4	3	13	10	5	7.0
8. Typhoid Fever	10	6	2	9	11	7.4
9. Venereal Disease Control	15	—	5	2	10	8.0
10. Poliomyelitis and Rabies	—	8	10	8	9	8.75
11. Epidemiology	1	10	13	5	17	9.2
12. Smallpox	—	13	10	12	7	10.5
13. Pneumonia—Influenza—Colds	13	7	12	—	14	11.5
14. Milk Control	14	19	9	4	12	11.6
15. Dysentery	—	12	15	14	13	13.5
16. Excreta Disposal	16	25	16	3	8	13.6
17. Virus Diseases—Miscellaneous	7	14	17	19	13	15.0
18. Industrial Health	9	11	23	15	16	15.3
19. Maternal and Child Health	17	16	—	16	21	17.5
20. Animal and Insect-borne Disease	21	16	13	13	15	17.6
21. Isolation Technic	18	—	—	—	—	18.0
22. Degenerative Diseases	5	20	25	25	—	18.7
23. Food Control	20	24	20	11	22	19.4
24. Problems of Medical Care	6	22	21	17	19	20.6
25. Chronic Disease	—	18	24	—	20	20.7
26. Sanitation	21	21	—	—	—	21.0
27. Nutrition	—	—	—	—	22	22.0
28. Dental Health	—	—	—	20	25	22.5
29. Public Health Administration	22	23	22	23	24	22.8
30. School Health	—	—	—	24	—	24.0
31. Garbage Disposal	24	26	—	—	—	25.0
32. Vital Statistics	25	28	26	21	26	25.2
33. Housing	27	27	27	26	27	26.3
34. Light and Sound	28	—	—	—	—	28.0
35. Chart-making	29	—	—	—	—	29.0

* Student Questionnaires—At the close of the Public Health Course students are asked to indicate which Lectures were most helpful to them, and which were least helpful. These positive and negative scores are combined and the Lectures ranked in order of the highest score. Students were not signed.

† Rank by years—A low score here indicates a high rank as computed from Student Questionnaires; "1" indicates that this particular Lecture was designated as most helpful for that particular year, etc.

‡ Adjusted Score—The rank achieved for the five year period is added and then divided by the number of times the particular Lecture was rated during the five year period.

GENERAL COMMENTS

General comments from the students were also solicited, and may be briefly summarized as follows:

1. The approach should be a little different from that of the average medical school course. Opportunities are appreciated for student participation in the form of seminars and round-table discussions.

2. Outside lecturers should be avoided, particularly those who emphasize the technical aspects of their subject and fail to integrate their discussions with the rest of the course.

3. Greater emphasis should be placed upon chronic and degenerative diseases; problems of medical care; industrial medicine; social aspects of medicine; and practical disease control activities which practitioners will be expected to carry on.

4. The administrative side of public health should be minimized and statistical data reduced as much as possible, with emphasis on *trends* rather than on specific figures.

5. Well organized and efficiently conducted field activities for small groups of students are useful and appreciated.

Transition in Medical Education

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"The Transition in Medical Education" is my title and having always enjoyed the humor of understatement I like the mildness of that word "transition." Nothing hasty, or violent, or exaggerated about it. Not partisan or tendential. Just a gentle soporific word. It suggests the metamorphosis going on inside a cocoon: the profound, unhurried metamorphosis by which natural forces accomplish results without the interference of man. An appropriate connotation, too, since the transition now taking place in medical education pursues its way curiously free from human intervention, from personal debate, from champions, from effort and advocacy. Some people breathlessly await a leader, an Apollo, to ride the sun of enlightenment up the Eastern sky. Meanwhile the earth, unconcerned with mythology, spins on as usual and the sun is going to come up on medical education without benefit of any flaming Apollo. Forces more powerful than human rhetoric are changing the purpose and the nature of medical education. What time we have spent looking for a prophet we could have spent better in reflection on impersonal factors and forces, for they are shaping the course of things to come.

So, in the name of reflection, may I offer you an observation in axiomatic form, with three corollaries or consequences?

The observation is simple enough and it is this: During the past seventy-five or eighty years one of the most significant efforts of medicine has directed itself to finding the cause of disease. This plain statement I could expand into an axiom: that the preoccupation with the cause of disease has greatly influenced medical education and continues to influence it. And you may rightly infer that this emphasis on etiology explains much of the current transition in medical education.

Now, first for the observation that the past seventy-five or eighty years have witnessed a special emphasis on the importance of finding the etiology or the cause of disease. Certainly no other eighty year period, in the history of medicine has contained such a remarkable succession of discoveries of the causative agents of disease.

To Pasteur we owe the concepts of the bacterial origin of certain diseases, and to Robert Koch the correct theory of specific infectious disease. Both ideas so obviously pivot around the concept of etiology, that we forget how powerfully they strengthened the search for causes. Perusing the medical chronology in Fielding Garrison's *History of Medicine* would show you how though inventions, remedies, operations and descriptions characterized earlier periods, the peculiar thrust of the past seventy-five years has been toward etiology. Encouraged by extraordinary and repeated successes, our fathers became convinced

that the search for the cause should be the central consideration in the study of almost any disease: not merely to observe disease, to describe or differentiate it,—not to treat, nor to watch or record its natural history.

In other centuries, doctors described disease and gave their best attention to methods of curing it. But from about 1870—the date is arbitrary—the constant quest has been for the cause. Etiology became, as it were, the husband of diagnosis and the father of treatment. So unequivocal was the authority of the causative agent that an aura of daring paradox surrounded Fred Shattuck's aphorism that "sometimes it is more important to know what kind of a fellow has a germ than what kind of a germ has a fellow." Even today, preoccupation with the causation or etiology of disease all too often eclipses the light that might come from a study of the dynamics of the disease process.

Let us not confuse etiology with diagnosis. True, many a disease is now to be diagnosed in terms of its cause. But there are still some diseases whose causes remain unknown and yet they can be distinguished or diagnosed. But no one nowadays is at rest until the cause has been discovered. We take such a primary concern for the cause as perfectly natural. I wonder if we don't exclude thereby some other very important aspects of disease? Do we not lose interest once the cause is known? Witness the atmosphere of the usual hospital for chronic disease. Witness the singular freshness of Howard Rusk's ideas upon the possibilities of intelligent convalescent care. If clinical description and narration had been the major characteristics of the past eight decades we would have had more use for our chronic hospitals. We would have prepared in them completed natural histories of disease. If we had cared as much for therapy as for etiology, we should have little to learn from Rusk, instead of much.

Mind you, this extraordinary accentuation of the importance of finding the cause has entirely justified itself. It provides some of the most triumphant accomplishments of what we call medical science or scientific medicine. But precisely because of its value, the role of etiology has become so accepted, so pervasive, and so powerful that we can hardly become aware of it afresh. It is even hard to call attention effectively to how much etiology dominates the present horizons of medicine and yet that is one of the purposes of this paper.

In our headlong and rewarding pursuit of causation, I should like to see some measure of refinement and sophistication. I would like to see causes differentiated as precipitating, predisposing or perpetuating—some such qualifying adjective is so often needed. I should like it to be a cardinal axiom of medicine that an organism is so intimate a relationship of constituent parts that you can not modify any one of them without affecting all the others; and that, therefore, a given result comes usually from not one cause but from a combination of causes, sometimes a sequence, sometimes a constellation or pattern; and similarly that a given cause has not merely one but many results, sometimes in a sequence, sometimes in a pattern.

Mere lack of time to marshal the evidence on the importance currently attributed to etiology suggests the epitaph of Sir Christopher Wren: "*si monumentum requieris circumspecte.*" If you will look around you, I will rest my

case, for there is no doubt whatever that for decades the most effective effort of medicine has been to find the causes of disease.

Let me suggest that this preoccupation with causation has had and has now three capital results.

The first consequence of thinking more about etiology than anything else is that the doctor turns a patient into a "case." Searching for causes tends to restrict the doctor's interest to the intellectual problems offered by disease in the patient. It may often be a blessing that this is so—but it is not an unmixed blessing, at least in the mind of the patient. The sick person often presents much more than an intellectual problem. He presents a more or less urgent claim for help in conquering his fear as well as his pain. He needs a companion in his weakness and reassurance against uneasy suspicions. Sometimes he utters this claim, often he remains inarticulate—but resentful if the doctor does not sense what is needed. Valuable as is the formulation of the problems of etiology—and no one can gainsay the debt of medicine to chemistry, physics and the medical sciences for our present knowledge of the causes of disease—the claims of the patient are set by the patient. They are often more than intellectual problems. Indeed, I think the only time you ask your doctor a purely intellectual question about your case you have already decided to compare this answer with what some other doctor may say.

In other words, the patient's demands transcend what etiology alone has to offer. The intellectual formulations of biochemistry or biophysics are inadequate to provide all the patient wants when he calls a doctor. Yet so rich have been the discoveries of the medical scientists in the past seventy years, that a very large measure of attention has been given to those aspects of illness that have appeared to be independent of psychological factors. This is clearly seen in the teaching hospital where diagnosis and etiological studies have outweighed every other consideration.

There is a good deal of subsidiary evidence in favor of the assertion that our generation of practitioners has ignored the claims of the patient in favor of the scientific interest of the "case." For example, others in attendance on the sick have flourished. The nursing profession has grown in importance and general esteem. Psychiatrists have found themselves asked for aid in throwing light on the emotional components of diseases with which they were but slightly familiar. It was more than possible for Canby Robinson to introduce to younger medical men such rediscoveries of the physicians' task as are suggested in the title of his book, *"The Patient As a Person."* Social Service grew rapidly because it met the patients' needs. Fortune has smiled on those forms of the "healing arts" which deliberately limit the intellectual approach to disease by the assertion of a single disease process or a single therapeutic procedure and so free the liberal remainder of the "healer's" energy and attention for handling the patient as a person. In other words, everyone regarding the patient as more than an etiological puzzle has found acceptance and grateful thanks.

As to this first consequence of emphasis on etiology, i. e., the neglect of the psychological aspects of both disease and its cure, we are in a period of transition in medical education. Medical psychology and psychiatry will, I believe, grow in importance. Both at the induction examinations and on the battlefields the psychiatrist's share of the casualties averaged between 30 and 40 per cent. In neither time nor budget does any medical school of my acquaintance reflect as yet the importance of psychological medicine to the work of the physician.

The axiom that a preoccupation with etiology has characterized medicine for the past seventy-five years has a second corollary and it is this: By so much as disease comes to be regarded as a matter of known cause and effect it ceases to be a matter of caprice, of pure chance, of mere bad luck. If we could see at one glance all the implications of this new approach to explaining the incidence of disease, we should readily agree to the importance of the change. Though it is still sensible to regard contracting some diseases as a matter largely of luck, an immense improvement sets in when we start thinking of being intelligent enough to avoid disease. I am cautious in my expectations. We may not be saying of anyone in this generation that "thanks to using his brains he avoided most of the specific infections," but we are headed in that direction.

Headed in the right direction and well out of simon pure superstition. But we are still in a very interesting transitional stage. The lay public in general still thinks that good health is a matter of good luck. Whoever paid for good luck? Why, the essence of good luck is that it costs nothing—no money, no effort. So who can be surprised if preventive medicine, the very logical flower of our knowledge of etiology, is still ignored by the vast majority of people? They do not know that scientific etiology is a relatively late comer in medicine, taking the place of superstition and speculation.

What fascinates me is this: how long will it take the general public to escape from the traditional view that disease is something you are lucky enough to escape and come to realize that most diseases are conditions you can be active and intelligent enough to avoid? How can we aid in such a vast and valuable change of opinion?

To hope for good health, but make no effort to have it, bespeaks the old traditional view of disease. That is the prevalent, the superstitious, the gamblers' view of disease. As soon as people realize that protection against illness and provision for medical care are as rational and valuable expenditures as those for food and housing, we shall reap the harvest of our knowledge of etiology and prevention. People assume good health as they assume good luck. Even the much vaunted insurance principle in health insurance schemes connotes the idea that illness is an accident, a matter of chance, and by just so much evades the fact that health, like food and clothing and housing, could be made an obtainable possession, a calculable asset, a purchasable as well as an enviable condition of existence.

The paradox of our situation in medical economics seems to me to be this: Society, still thinking of health as a bit of luck, is not quite ready to pay for

the cost of being free from disease or being cared for when ill—and this reluctance continues even at a time when medicine could deliver so much if the bill could only be met. I do not see adequate financing of our medical schools anywhere in sight. I am constantly astonished that when 80 cents buys no more than a dozen eggs, a hospital plan that costs 80 cents a week has to struggle for acceptance. I am at times depressed by the salaries offered to public health officers. And the only way I can explain the prevalent gamblers' view of health and sickness and the cheap little hopes of "getting by" is to remember how recent is our knowledge of etiology.

I like to set from time to time the march of medicine in terms of human lives. Pasteur's grandson is one of the leading clinicians of Paris today. Only two generations have been exposed to the great effects and the innumerable side effects of the discoveries of his grandfather. Surely, then, we are still in the cumulative, the mounting, the proliferating stage of the scientific era in medicine. Maybe familiarity has dulled our wits to the true importance of what is happening about us. There is, perhaps, an analogue to our situation in the story of the actor in a Western melodrama. His line, when fired on by the villain was, "My God, I am shot!" One night as a bit of playful teasing, the villain's revolver was loaded with a little something more than the customary blank cartridge. In addition to the expected crack of the revolver as his cue, the actor felt a sharp pain under his shirt and promptly shouted, "My God, I *am* shot!" We could experience a similar surprise if we were not so blasé.

Despite discouragement and frustration, the future of preventive medicine is bright because, little by little, human beings, as they realize what a knowledge of etiology offers to medicine and so to them through medicine, will see that maintaining or regaining health is as wise and as natural a living expense as housing, clothing and food. The general public is not yet prepared to pay for training and sustaining a competent profession in adequate numbers. But this will come.

The third consequence of the remarkable advance during the past three quarters of a century in our knowledge of the causes of disease poses a vivid ethical question to our profession. In essence it is this: You medical men know the cause of (say) typhoid fever,—but what are you going to do about it? Obviously the question could not have been asked until the etiology of typhoid fever was known once and for all. From a time when the honest ignorance of our profession dictated the wisdom of waiting till we were called, we have passed well within three generations to a time when honesty dictates a far more active role for us to play. May I observe that our much prized ethical inheritance, the Hippocratic Oath, makes no reference whatever to what may be the duty of a doctor who knows exactly how to prevent not one but many diseases? No better illustration could be offered to show the futility of believing that while science changes, ethical precepts and moral codes need no revision or repair. In the absence of any indications from any great moral leaders on the subject, we devised rules for automobile traffic and they work. Why not some

revision of medical ethics to catch up with the moral implications of knowing the causes of disease?

What do I have in mind? Well, you remember the art of the politician is described as the ability to convert private desires into public demands. It seems to me that the plain duty of a doctor as soon as he knows with absolute certainty what causes a disease is to convert private scientific knowledge into public information and to be ready to act on a public demand for action. The doctor is not wise to assume more power than society gives him. He should remember that the government gave him his license and that the government can take it away. Lord Acton observed sagely, "Power corrupts and absolute power corrupts absolutely."

The wisest course for us as doctors is to inform and instruct the public, constantly and competently, for the education of the public is the one inexhaustible source of strength in promoting the public health. There ought to be an assistant professor of health education to work with every professor of preventive medicine in this or any other country. Is there any sense in doing so little as we are doing now to inform those in authority as to what they could have? Two immense media beckon to any one with imagination—the movies and the radio. Thus far the exploration of these means of instructing the laymen has little in common with great adventures. The only full praise I can offer our profession in this matter relates to the scrupulous fidelity with which we keep these promises in the Hippocratic Oath: "To impart precept, oral instruction and all other instruction to my own sons, the sons of my teacher and to indentured pupils who have taken the physician's oath, but to nobody else."¹ "*But to nobody else*" . . . does not that one phrase show how fresh and urgent are the ethical problems resulting from the knowledge of the causes of disease—known now to scarcely three generations of mankind.

Is medical education in a transitional stage? I trust you see it is. I hope you agree that it is a slow, big, steady series of changes, impersonal and inescapable. I have attempted to interpret the transition as the consequences for us all of the medical scientists' triumphant search for the causes of disease. The amazing progress in the field of etiology is limited to scarcely three generations of human beings. We are still in the midst of the transition. Medicine cannot within three generations, father, son and grandson, so extensively accept the approach of science without being deeply changed in its every aspect—teaching, practice and social status.

My thesis has been simple and the corollaries I hope correct. The scientific method forever seeking causes has shaped the doctors' approach to his tasks, especially since the discoveries of Pasteur and Koch not only established the causes of many diseases but established etiology as the most important aspect of the study of any disease. As a result of this upsurge of etiology the concepts of causation became at times over simplified and thus insufficient, the patient was ignored as a person and the natural history of disease was deserted as a study. But any

1. CLERDENNING, LOGAN: *Source Book of Medical History*. New York: Paul Hoeber, 1942, 685 pp.

disease will begin to lose its purely fortuitous and irrational flavor as soon as its cause is established and we are, I believe, in the still early stages of getting ready to purchase health and pay the bill of illness. Hygeia will not much longer be considered the daughter of Lady Luck, nor the Caduceus of Mercury, the God of Gamblers, provide the ironically appropriate insignia of hospitals and doctors in America. Lastly, the knowledge of the cause of disease has made possible preventive medicine and obliges our profession to re-examine its ethics and its traditions, especially the traditional reluctance to inform the public in matters of health.

The transition in medical education reflects the larger transitional stages I have outlined. But what other explanation can be given for the curious juxtaposition in the Goodenough report, of a recommendation that more time be given to medical psychology and to preventive medicine—and these recommendations for curricular changes in a country struggling to find a system that will pay for preventive medicine and medical care for the whole population and not run away from ill health as though it could not be dealt with rationally and predictably.

This, then, is the great transition in medical education, that we are in the midst of the consequences of efforts, hardly three generations old, in determining the causes of disease.

The Teaching of Psychiatry*

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The shortage of psychiatrists was a major medical problem of the military services during the war, but it is not a recent phenomenon¹; it simply became so apparent and so urgent that it could no longer be ignored. This shortage, of many years standing, has been implied in the admonition frequently heard during the past twenty years,—“don’t oversell psychiatry to the public because there aren’t enough psychiatrists to take care of any more patients.” We know that more than one-half of the hospital beds in the country were for psychiatric patients. No one knows the percentage of run-of-the-mill patients in medical and surgical clinics, general hospitals and private offices who need psychiatric help and do not get it. Guesses run from 60 to 90 per cent.

The medical profession, as a whole, has appeared to feel little responsibility for the care of these patients. Psychiatrists and their subject were considered by most doctors to be as queer as their patients; all three to be avoided, if possible. If medical and surgical patients with psychological problems do not respond to the “common sense” admonitions of their doctors, it is too bad but that is their hard luck. Even if the more enlightened doctor sought to refer such patients to psychiatrists, there might not be one available or such prolonged and expensive treatment was advised that it was not practical. Perhaps, it would be less expensive than an operation but it is easier, somehow, to pay for something tangible—even if relief is questionable. Then, too, discussion of cases with some psychiatrists, perhaps many, would wander off into the realm of the esoteric or be expressed in a jargon often incomprehensible and sometimes objectionable.

What efforts psychiatrists themselves made to correct the shortage in their specialty were apparently ineffectual, judging from the small increase in their number. Progress was slow up to the war in making the subject intelligible and useful to other physicians, though there were plenty of books for lay people written by both psychiatrists and laymen.

The war and its aftermath forced this subject to the attention of practically all doctors in the armed forces. There are many signs of an awakened conscience in civilian practice and an increased interest among physicians who need and want intelligent and practical guidance in psychiatry so that they can give more intelligent help to their medical and surgical patients. No further time need be spent belaboring the point—the need for more psychiatrists and more psychiatric

* Published with permission of the Chief Medical Director, Department of Medicine and Surgery, Veterans Administration, who assumes no responsibility for the opinions expressed or conclusions drawn by the author.

† On leave, College of Physicians and Surgeons, Columbia University.

1. EBAUGH, F. G., and RYMER, C. A.: Present Status of Psychiatric Teaching, *Am. J. Psych.*, 99: 610-614 (Jan.), 1943.

training for all doctors is apparent to every physician who practices medicine with an open mind. Many patients who needed help recognized it long ago and turned to Christian Science.

There are three groups that need to be reached if this problem is to be met adequately. The first group are the students in the medical schools. They must be taught to see that psychiatric problems are an integral part of practically all medical problems to a greater or lesser degree; that it is an interesting subject, still in the pioneer stage, to which an objective approach can be made; that it has untold and unrealized social significance; that it is an art, the practice of which challenges the imagination and the scientific spirit; and that there is a respected, useful and lucrative place for psychiatrists in the community.

The medical student should know the psychiatry he needs to practice another specialty or do general practice adequately. This has been well stated by Dr. Robert H. Felix in a recent article:²

"It is certainly not too much to expect of a physician that he have as much of a working knowledge of psychiatry as he has of the other medical specialties. The principle and practice of psychiatry are not more esoteric and unfathomable than any other branch of our profession. The incision of a furuncle does not require the services of a Diplomate of the American Board of Surgery and, by the same token, it does not require a diploma from the American Board of Psychiatry and Neurology to understand and treat the minor personality disorders which are found in every physician's waiting room."

How many medical students at graduation or as interns have any such concepts of the field of psychiatry and who is to blame that they do not have it? The deans and committees on curriculum who do not give sufficient time for adequate courses? Or, we psychiatrists who have not used our own psychological knowledge to overcome prejudices and to make our subject intelligible and interesting and an integral part of the practice of medicine? It might be that we are lacking in initiative or perhaps even in courage and faith in our subject.³

It is not due to chance that some medical schools send from 10 to 15 per cent of the students into psychiatry while others rarely produce even one psychiatrist. It is a direct index of the kind of teaching as well as the attitude of the teachers,—not merely the amount of psychiatry to which they are exposed. Granted, that it is no easy job to win a place among doctors and in medical schools for a specialty that is essentially a newcomer,—at least in its attention to the nonpsychotic patient. Granted, that there is no more conservative profession. But this conservatism has never caused the exclusion by right thinking physicians of any innovation that could be shown to be for the good of the patient.

It is important that now the curriculum of medical schools be re-examined and that the integration of psychology and psychiatry with preclinical and clinical subjects be considered without prejudice,—or as little as possible,—by committees of internists, surgeons and psychiatrists. It is not a question of the

2. FELIX, ROBERT H.: Maladjustment in the Returning Veteran: Comment on Etiology and Symptomatology, *J. Omaha Midwest Clin. Soc.*, April, 1946.

3. As short a time ago as 1937, 42 per cent of our medical schools had no clinical facilities for teaching psychiatry. In 1939, the Council on Medical Education and Hospitals of the American Medical Association reported that "psychiatry has not yet found itself in the medical curriculum—(it is) one of the most undeveloped areas in the medical curriculum and certainly in medicine." Eighty-five per cent of our medical schools had teaching staffs inadequate to meet the ordinary demands of teaching. EBAUGH, F. J., *The History of Psychiatric Teaching in the United States from 1844 to 1944. Am. J. Psych.*, 100: 151-160 (April), 1944.

relative importance of one or another specialty, but of an obligation to meet a medical situation that is realized to be of great importance to many patients. Further, it is even more important that courses now being given should be re-examined from the standpoint of their usefulness to men who will not be psychiatrists but most of whose patients will present some psychological problem. If they would be good doctors, they can no more ignore the anxiety of a hypertensive patient than overlook his kidney functioning.

Where these ideas have been put into practice it has been shown to be most useful, e. g., at the University of Louisville. Junior interns in medicine get six weeks on the psychiatric service; senior interns, two months; and residents, six months. Of the sixteen men who completed their training, four then took further training and went into psychiatry; all said that it had made them better doctors; none said that it was too much, and one-third would have liked more time in psychiatry. Two-thirds were satisfied.⁴ Similarly, the University of Colorado,⁵ Columbia University, the Medical School of the University of Illinois and others have carefully integrated the teaching in psychiatry with other specialties. Ward rounds are not enough.

It may be up to psychiatrists to see to it that the medical students leave their school and internship with the fundamentals of psychiatry well integrated into their knowledge of medicine, but no one can give the application to other specialties as well as the specialists themselves. The interpretation of psychological and psychiatric knowledge and its usefulness in the care of infants and children, for example, can best be given by the pediatrician, and in internal medicine by the internist. The corollary to this is obviously the appointment in each clinical department of a medical school of at least one man who practices medicine or a specialty and teaches it with due regard for its relation to the whole man.

The second part of the problem concerns the availability and adequacy of training facilities for those wishing to become psychiatrists. In the past, anyone wishing training in psychiatry who could not go to Europe had, with the notable exception of a few hospitals, no other choice than to pick up what knowledge and experience he could from the psychotic patients in state hospitals with little or no supervision or instruction. For knowledge of the neuroses, psychiatrists, for the most part, had to depend on their own unguided observations and experience or a personal analysis and the teaching at the few analytic institutes. In the 20th century adequate training in every other specialty could be obtained in medical schools and hospitals in this country. Even up to a year ago, there were all too few places which provided a well supervised, adequate plan of graduate training and these had facilities for only a limited number.

To meet the overwhelming need for psychiatrists, the Army and Navy detailed doctors to schools for a three months' course in psychiatry. As a result many of them wanted to become psychiatrists. Others, fresh from internship,

4. ACKERLY, S.: Trends in Psychiatric Teaching and Practice. *South. M. J.*, 34: 207 (Feb.), 1941.
5. BILLINGS, E. G.: Teaching Psychiatry in the Medical School General Hospital. *J. A. M. A.*, 107: 635 (Aug. 29), 1936.
6. ERAUGH, F. G.: Importance of Introducing Psychiatry into General Internship. *J. A. M. A.*, 102, 982 (March), 1934.

sought training. To take advantage of this desire and to staff its own hospitals and clinics, the Veterans Administration has undertaken a graduate training program through the affiliation of its hospitals and clinics with medical schools.⁷ (The program includes other specialties also.) The Army and Navy are training psychiatrists and the Public Health Service has a program subsidizing the teaching of psychiatry in medical schools at both the graduate and undergraduate level with the major emphasis on the undergraduate teaching and the training of teachers.

In the third place, even though we interest a sufficient number of medical students in psychiatry and provide adequate training for them, even if medical students begin to get an adequate knowledge of psychiatry,—at least comparable to the other specialties,—there still remains the great body of general practitioners and specialists for whom the psychological problems of their patients are a source of discouragement, frustration and often impatience. They cannot be blamed for their attitudes or failures, for they cannot use techniques or knowledge to which they have not had access. Most of the textbooks on psychiatry, with the exception of a few published in recent years, are unreadable to the average doctor and would give little practical help even if understood. Short courses designed for them have been noteworthy chiefly by the paucity or lack of practicability. But not to have this knowledge is like trying to examine a patient without a stethoscope or without knowledge of the heart action. True, one can ask a few questions about the patient's family and sex life, just as anyone could listen to the action of the heart with the ear to the chest. But then, what?

The Commonwealth Fund has assumed leadership in the solution of this problem. At the Medical School of the University of Minnesota, a group of rural and small town general practitioners worked for two weeks with the psychiatric problems of patients similar to those met in their own practice. They were directed by some of the most imaginative and farseeing teachers of psychiatry in the country. An account of this experience, with its value and mistakes, is now available.⁸ It can serve as an inspiration and guide for doctors and medical schools everywhere.

Any program obviously depends for its achievement on the teaching staffs of the schools. But because of the previous status of the teaching of psychiatry, instructors are woefully few, and since many schools have never offered graduate training and often little undergraduate work, a whole new teaching organization must be built up in many places. Private practice naturally calls many able men just out of the service but many of these are giving part of their time to teaching.

This shortage of teachers is the bottleneck that must be broken if the medical profession is to fulfill its obligation. Methods need to be worked out to make teaching more effective and more consideration given to the economical

7. Two hospitals not affiliated with medical schools have their own teaching program.

8. SMITH, GEORGE: *Psychotherapy in General Medicine*. Commonwealth Fund, N. Y., 1946.

use of the teachers' time. In the main, our teaching has been derived from apprenticeship; the clerks and interns are a modern adaptation. As subjects got more complicated and under the influence of the European schools, more lectures and laboratory work were added. The curriculum, like Topsy, just grew.

But effective teaching, with the economical use of faculty, cannot be done haphazardly, with doctors giving lectures, making ward rounds and teaching laboratory techniques with no relation to the content of the related courses. It will be of relatively little use to get more teachers if we do not train them in the art of teaching and use them wisely. In any case, we will not have enough teachers to be extravagant with them.

Therefore, one of the outstanding and basic problems in the teaching of psychiatry is the arrangement of our knowledge and theory in an orderly and related manner so that inherent connections will be manifest and the unsolved problems and speculations apparent. Since the practice of psychiatry can, in one sense, be considered the process of educating our patients, we should, theoretically, be good educators of our students. We should have methods for coping with their resistance to the subject matter and methods of presenting it so that it brings out and encourages the critical, speculative and original qualities of the minds of the students. Since we deal so largely with associations, it should be easy for us to recognize the educational importance of teaching in such a way that the association of psychological function to physiological function and structure is brought out, where known, and to organize methods of teaching and content of courses to that end. Methods need to be worked out for teaching psychiatry in relation to other branches of medicine rather than exposing them to separate groups of observations. We need a well organized structure instead of the pot-pourri of facts, observations and theories to which the medical students in some schools are exposed. In others, the wholehearted working together of all branches of the faculty makes for an integrated education program.

CONCLUSION

Nothing has been written in this paper that is new to any doctor. That fact is not important. But concerted action to solve this problem is new and important. The medical schools and the governmental and private agencies working with them need the help of every qualified teacher in the country to carry on educational experiments with an open mind to give an honest evaluation of his experiences, and to act on it. Doctors and particularly psychiatrists have two choices open to them. We can continue to put the major emphasis on more hospitals to house the rapidly increasing hundreds of thousands of mental patients. Or, we can stress the training of general practitioners and specialists to recognize and care for many mental patients in early stages and train an adequate number of psychiatrists to treat the patients needing his help. In addition, we can train obstetricians, pediatricians and general practitioners to institute more specific and better mental hygiene as a preventive measure. While the burden of this task is on the psychiatrist, he can only carry it with the wholehearted support of all the medical profession.

A Note on a Course in Applied Laboratory Diagnosis*

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The present medical curriculum in most medical schools calls for a single course of laboratory diagnosis in the sophomore year. This course is supposed to give the student a complete viewpoint of laboratory medicine. It has been my impression after observing students in the clinic in the junior year that this course alone is insufficient to equip the student either for ordering laboratory work, or for evaluating it from the standpoint of individual disease entities.

Accordingly, at Creighton University Medical School, the course in laboratory medicine has been revised and divided into two parts: (1) the conventional course in laboratory diagnosis, given in the sophomore year, and (2) a new course in applied laboratory diagnosis presented in the junior year.

The course in laboratory diagnosis in the sophomore year presents the material from the standpoint of individual type of specimen and test, both from a procedural and interpretation viewpoint. This is given for one or preferably two trimesters. Thus at the end of the sophomore year the student is conversant with laboratory medicine from a laboratory angle.

In the junior year, the course of applied laboratory diagnosis deals with the laboratory aids in individual disease entities. This consists of one lecture a week over two trimesters. Laboratory tests are now dealt with from the following standpoints: (1) what is the role of the laboratory in each disease entity; (2) what tests are of value in each individual disease; (3) how are the tests interpreted in the specific entity in question; (4) how and what kind of specimens should be collected; (5) how long after the request of a test may a report be anticipated.

Through the medium of the course of applied laboratory diagnosis, the student is oriented towards laboratory medicine, from a clinical as well as laboratory viewpoint. He now sees laboratory medicine as one of the arms of diagnosis, in addition to physical, roentgenologic, electrocardiographic diagnosis, etc. I believe that this type of course fills a need in the present medical curriculum.

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*The Humanities in the
College Program*

In the *Journal of Higher Education*, May, 1947, page 227, John Erskine, the well known writer, makes a very strong plea for more and better teaching of the humanities by colleges and universities. He says that the freshman of the future will take English to make sure that he can write with reasonable correctness. He will take humanities to make sure that he is reasonably humane. For many years papers have appeared in the JOURNAL OF THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES urging that more time be given in college curricula to the classics and the humanities. Proponents of that thought have been accused of underestimating science as culture. Science is culture and is necessary to a good education as bread is the staff of life, but unless something is put on the bread to make it tasty and more desired as a food, it will not be relished. It is equally true of science and the humanities. Science does make for culture but the humanities broaden it and give it training and character—a development of the spirit, an inspiration to the heart. The educational value of the classics and the humanities cannot be gainsaid.

Mr. Erskine expresses the wish that Latin and Greek were taught in all schools thoroughly and enthusiastically as languages to speak as well as to read; as living languages rather than dead ones. He also expresses the wish with equal earnestness that the sciences were taught as forms of knowledge to be used by all educated men and women and not exclusively by specialists. He says that, of course, the humanities ought to

train the student, first of all, to take the point of view of other men, to take their point of view easily, intelligently and sympathetically—the point of view of others in our own day and of others in more remote times.

He urges the reading of great books to be taken up chronologically. He described the great book course at Columbia which called for the reading and discussion of a book a week. He says that by doing this the student gathers a mass of impressions and judgments from books in an earlier period which will help in the understanding of books in a later period. His report on the success of this course is a most illuminating and interesting one and should be read by every educator. He concludes by saying that to teach the humanities, to impart any humaneness to our pupils, the teacher must have a humane philosophy, some form of religion. At the very least, he must believe in a spiritual life, he must believe that a human being has a soul; this faith must have a Catholic background, a Protestant or a Jewish background. It is useless to bring to the teaching of humanities only such impoverished philosophies as would interpret man as a biological or chemical accident, or as a by-product of economic forces.

It is to be hoped that Mr. Erskine's suggestions will be accepted and adopted and that his wishes will be fulfilled; that the humanities will, at least, come into their own and be recognized as an essential part of a good education, especially for him who intends to enter on the study of medicine.

Teaching on Nutrition

In recent years, interest has developed, and is increasing in degree, in the subject of nutrition. A few medical schools have given considerable thought to the subject, but, thus far, data are not available on the extent of teaching that is being done in this field. Increasing emphasis is being placed on proper nutrition in the treatment of the sick. Food is rapidly assuming equal, if not greater, importance than drugs. The increasing use of vitamins may be accepted as proof of this statement.

The United States government, especially the United States Army, has taken a very large interest in the subject of nutrition since it has responsibility of considerable degree for feeding large numbers of people in Europe and elsewhere who are definitely underfed by reason of circumstances arising from the war. The Surgeon General of the United States Army has a Committee on Nutrition, and also an advisory board to this committee, on which a number of organizations are represented, including the Association of American Medical Colleges. Many demands for time in the curriculum for various subjects are continually being made; certainly the subject of nutrition is deserving of serious consideration for time in the curriculum. It might well be spread throughout the entire curriculum, beginning with biochemistry and ending with the clinical teaching in all fields. We know too little about nutrition yet to make any very great dent in our ignorance; but unless the medical schools realize their responsibility and do something about teaching their students the rudiments of nutrition, at least, the subject will never be developed as fully as it should be. It is another problem for committees dealing with the revision of the curriculum to consider.



Premedical Education

The title of this editorial will not meet with the approval of all medical educators; perhaps, even none. In 1939,

the Association of American Medical Colleges went on record as being opposed to not only the term "premedical" but everything for which it stood. It seemed to imply that anyone who intended to study medicine would be compelled to submit to a certain amount of regimentation which would, naturally, deprive him of personal choice in choosing those subjects in the curriculum which he might feel would have value for him after he entered on the study of medicine. Colleges preparing students for medicine were duly notified of this action of the Association but, unfortunately, no attention was paid to this pronouncement. The colleges continued to do as they had done. The Association pointed out that what it wanted was educated persons, not robots. They stressed the fact that it did not want any more time spent on subjects required for admission to medical school than was indicated in the published requirements. Furthermore, it was pointed out that the suggested studies had fully as much, if not more, value in giving the applicant a good, sound, basic education. However, the colleges acted on the assumption that if one year of a prescribed subject was good, then two or more years was better. Therefore, students coming to medical school were not as well prepared for the study of medicine as it was hoped they would be. An indication of value is the fact that the mortality in the freshman class is virtually the same today as it has been for the past twenty-five years, or more.

Last February, Alpha Epsilon Delta, an honorary premedical fraternity, sponsored a conference at which premedical and medical education were discussed. There was almost unanimous agreement, according to the president of the fraternity, that there has been a tendency to overemphasize the science content of a premedical education to the neglect of social sciences and humanities. It was further agreed, unanimously, that students preparing for the study of medicine should be grounded thoroughly in the fundamentals of physics, chemistry and

biology, but not beyond the requirement of the medical school; that they should be encouraged, even required, to take more courses in the social sciences and humanities. Piling up credits in science was both undesirable and to be discouraged. It was recommended that students taking the full four year liberal arts course leading to a bachelor's degree should take about 50 semester hours in the natural sciences and the remaining 70 or 80 hours in the social sciences and humanities.

Discussing the foreign language requirement, there was a feeling that this requirement should be dropped; but it was suggested that so far as the medical schools are concerned Greek and/or Latin could be used to satisfy the language requirement since these languages provided a more useful basis for scientific and medical terminology than does any modern language, and they go further in giving the student a real, fine education.

All this is very gratifying and may be taken to indicate that the colleges are finally seeing the light. Perhaps they will act on the suggestions and recommendations made at this conference. We hope that they will.

♦ ♦

Licensure Statistics

The *Journal of the American Medical Association*, May 17, 1947, again presents its annual survey of licensure statistics. It is impossible in the space available to discuss, even briefly, all of the valuable information contained in this analysis. However, it is of sufficient importance for medical schools to study these statistics very carefully, keeping in mind that so far as the individual school is concerned it must make some analysis of the data reported for that particular school. Graduates often take the examination of more than one State Board. If they fail to pass, it increases the percentage of failures, giving a wrong impression as to what happened to the graduates of that school. Schools can easily check these data and should not fail to do so.

It is interesting to note that for the 69 medical schools of the United States represented in this survey, their graduates are responsible for only 3.10 per cent of the failures to pass, (9.9 per cent for all schools). The nine Canadian medical schools listed had 12.6 per cent of failures. Only 12 of the medical schools in the United States are reported as not having had any failures at all. Eighteen schools are charged with less than 2 per cent of failures; seven schools had more than 10 per cent of failures, representing 35 failures among 232 examinees. Perhaps, there were multiples in this group. The highest percentage of failures for any one school was 31.6, representing six failures out of 19 examinees. The remaining six high failures were as follows: 21.4 per cent (six out of 28); 20 per cent (one out of five); 16.7 per cent (one out of six); 13.2 per cent (nine out of 68); 11.6 per cent (eight out of 69); 10.8 per cent (4 out of 37).

It is astonishing to find that the graduates of 13 unapproved medical schools are represented in this survey. There were 62 graduates (duplicates?) of whom 41.6 per cent failed, mostly in New York, Massachusetts and Indiana. It is difficult to understand why some of these graduates were admitted to examination in States whose rules prohibit recognition of graduates of unapproved medical schools.

This service rendered by the Council on Medical Education and Hospitals, should prove very helpful to medical schools. It would be very interesting to have an analysis of similar data based on information which medical schools could supply for their graduates who took licensing examinations during the period covered by the report. It would give a more correct figure of actual failures and successes to passing these examinations because duplications would be eliminated.

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Medical Education in Mississippi

The State Medical Education Board of Mississippi has celebrated its first anniversary. The report made by Dr. D.

S. Pancratz, dean University of Mississippi School of Medicine and chairman of the Board, revealed that the Board has received more than 400 applications from 150 towns in the State. Awards were made to 60 applicants, of whom 34 were veterans, 13 non-veterans, 6 women and 7 Negroes. Thirty awardees entered the School of Medicine of the University of Mississippi; 30 entered other medical schools. Awardees are obligated to return to the State to practice in rural communities in which there is not now a physician or an insufficient number of physicians to meet the health needs of the population. The work of these students is checked closely by the Commission to make certain that it is of such a quality as to warrant a continuance of the loans. All payments under the loan are made directly to the medical school. The plan is regarded as having been a success thus far. Mississippi is desperately short of physicians. It is hoped that under the plan this shortage will eventually be overcome.

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Eben J. Carey

We regret to announce the death of Dr. Eben J. Carey, dean of Marquette University School of Medicine, Milwaukee, and professor and head of the department of anatomy. Doctor Carey had for long been an indefatigable worker, doing much research which had earned him many awards. Death was due to an infectious hepatitis. Doctor Carey was a good friend and a willing helper to those in need of help. R. I. P.

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Call for Professors Emeriti

The Associated Boards for Christian Colleges in China have issued a call for professors emeriti in the clinical fields of medicine to volunteer for a two years' term of service to assist in the rehabilita-

tion and development of medical education and service in China. For full information, address Mr. Robert J. McMullen, 150 Fifth Avenue, New York 11, N. Y.

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Survey of Medical Schools

A joint meeting of the Council on Medical Education and Hospitals of the American Medical Association was held in Atlantic City, June 13, for the purpose of discussing ways and means for carrying on the projected survey of medical education and inspection of medical schools. It was decided that to implement this work properly, a temporary committee representing both organizations should be appointed; that this committee should report to the Association of American Medical Colleges at its annual meeting and to the House of Delegates of the American Medical Association at its meeting in December. This committee will plan how the survey should be conducted, by whom—as to personnel—and how much time should be devoted to it.

The committee appointed consisted of the following: Council on Medical Education and Hospitals of the American Medical Association: Drs. H. G. Weiskotten, Victor Johnson and Donald G. Anderson. Association of American Medical Colleges: Drs. Jos. C. Hinsey, Walter A. Bloedorn and A. C. Bachmeyer.

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John H. Musser Wm. S. Middleton

Dr. John H. Musser, professor of medicine, Tulane University of Louisiana, was reappointed a member of the Council on Medical Education and Hospitals of the American Medical Association. Dr. Wm. S. Middleton, dean and professor of medicine, University of Wisconsin Medical School, was appointed a member of the Council to succeed Dr. Chas. Gordon Heyd, who resigned.

College News

New York University College of Medicine

Dr. Julian I. Gilliam, recipient of the first in a series of fellowships to be awarded by the Virginia Cancer Foundation to provide medical care for Virginians suffering from cancer, has begun a year of training in cancer work at Bellevue Hospital under supervision of the College of Medicine faculty. The young Negro physician, who will return to Virginia to enter a proposed state wide cancer center in Roanoke for the benefit of Negroes, is receiving the training as a postgraduate student. The Virginia fellowships are open to both white and colored doctors. Dr. Gilliam is specializing in diagnosis of cancer and treatment of the disease by radium and X-rays (radiation therapy). He is the fourth Negro doctor to be trained at Bellevue by the College of Medicine for work among Negroes afflicted with cancer. The College of Medicine has remitted the fees usually charged for a year of postgraduate study. Working with Dr. Gilliam as fellow trainees are 15 Army and Navy veterans, some of them being paid by the City of New York, some by the government under the G. I. Bill of Rights and some by the National Cancer Institute. All the trainees are doctors. One of them, financing himself, came from South Africa and will return there to practice among the cancer sufferers in his country.

The University will establish an Institute of Rehabilitation at a cost of \$2,500,000. It is designed to help the patient from the bed to the job. It will be a part of the New York University-Bellevue Medical Center.

Dr. Donal Sheehan, professor of anatomy, has been appointed general director of the Commonwealth Fund to succeed Barry C. Smith, who retires September 1.

New York University recently inaug-

urated the institute of Industrial and Social Medicine as a unit of its New York University-Bellevue Medical Center. Dr. Anthony J. Lanza, one of the nation's leading authorities in the field of industrial health, will join the institute as professor of industrial medicine. A veteran of both world wars, where he pioneered in industrial health work, Dr. Lanza holds the Legion of Merit, and in 1946 received the William S. Knudsen award for the most significant contribution to the field of medicine. He is associate medical director of the Metropolitan Life Insurance Company. The institute will offer training for both professional and lay workers, and will award appropriate degrees. There will be in operation in conjunction with the institute a new general group practice clinic, staffed by members of the college faculty.

The institute will offer the following program: (1) Specialized training of experts in industrial medicine; (2) Expansion of present training methods in problems of industrial health; (3) Research in industrial toxicology; (4) Research in industrial physiology and psychology; (5) Research in tropical medicine; (6) Research in social medicine; (7) Statistical research; (8) A model program of comprehensive medical care and prevention; (9) Rehabilitate industry's disabled and handicapped and get sick workers from bed to job faster.

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University of Texas Medical School

Dr. Henri Makower, director of the Institute of Microbiology of the University of Wroclaw, Poland, spent several weeks in April at the medical school in surveying studies of Dr. Ludwik Anigstein on the chemotherapy of rickettsial diseases, and investigations of Dr. Morris Pollard on virus diseases.

Dr. Ardronny Packchianian, director of the Laboratory of Micro-Biology of the Medical School, spent several weeks in April and May as visiting lecturer in tropical medicine at the Universidad de Nuevo Leon School of Medicine, Monterrey, Mexico. Doctor Packchianian gave a series of lectures and demonstrations on Chagas' disease, Weil's disease and Leishmaniasis.

Dr. Plinio Rodriguez, of the Butantan Institute, Sao Paulo, Brazil, spent two weeks in April visiting the medical school to acquire new methods of studying rickettsial diseases, as developed by Dr. Ludwik Anigstein.

Dean Chauncey D. Leake gave the annual Phi Beta Pi Medical Fraternity Lecture at the University of Colorado School of Medicine, April 9th, under the title "Letheon: The Cadenced Story of Anesthesia."

A special grant of \$10,000 has been approved by the U. S. Public Health Service for the support of a study of experimental vascular syphilis under the direction of Dr. Chester N. Frazier in the laboratories of the Department of Dermatology and Syphilology of the Medical School.

The John Sealy and other affiliated hospitals of the University of Texas Medical Branch, Galveston, handled 408 casualties resulting from the Texas City disaster of April 16th. Two emergency first aid and clearing station teams were at the scene of the explosion within 40 minutes. These teams were formed of orthopedic surgeons, residents, and senior medical students. They assisted in the efficient work of the Texas City physicians and the industrial first-aid groups in the prompt care and clearance of the injured to the various available hospitals. Casualties began to arrive at the receiving station in the outpatient clinic within an hour. 362 casualties were classified, given preliminary treatment and hospitalized within the first five hours. Volunteer medical and nursing personnel, and teams sent by the Army and Navy, enabled ten operating groups to function

during the following night and day. Some 40 additional casualties were admitted. By April 20th, twelve deaths had occurred, two from gas gangrene, 120 patients had been discharged, 90 convalescents had been transferred to the Army hospital at Fort Crockett, and the remainder were on routine hospital care. Few burned cases were encountered. Multiple puncture wounds, serious contusions, compound fractures, together with head, ear and eye injuries were frequent. The experiences gained in the war aided greatly in the efficient management of the casualties. Impressive were the results of close teamwork between skilled specialists. The large pool of medical and nursing students aided greatly in furnishing special technical help at all times. The anatomy staff and freshmen medical students assisted in the classification and identification of the many dead in Texas City. The Blood Bank and emergency supplies of whole blood furnished by Dr. J. M. Hill of the Dallas Blood Bank of the Baylor University Hospital, Dallas, were major factors in the successful handling of the seriously injured. The American Red Cross responded promptly and most efficiently with large amounts of emergency supplies, and with much helpful clerical personnel.

Dr. A. O. Singleton, for many years professor and head of the department of surgery and a well known figure in surgical circles, died June 11.

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University of Wisconsin Medical School

It was recently announced that Walter J. Meek, Ph. D., professor of physiology and associate dean of the Medical School of the University of Wisconsin, had been elected to membership in the National Academy of Sciences.

Dr. Meek is the only member of the medical school faculty who has been honored by such membership. During the war years from 1942 to 1945, in addition to his duties in the Department of

Physiology, he served as acting dean of the medical school in the absence of William S. Middleton, dean.

His contributions to the field of physiology have been very extensive. The heart and the vascular system have been the primary areas of his study. At the same time he has added to the knowledge of the physiology of the gastrointestinal tract through his work and his publications. In addition, he has had a profound interest in the Dr. William Beaumont Foundation, Inc., and has served as chairman of the Advisory Board of that organization. The medical school at the University of Wisconsin has a provincial pride in Dr. Beaumont because of his work at Prairie du Chien and in Fort Crawford, and Dr. Meek has been very active in the direction of memorializing Beaumont on the basis of his monumental contributions to the field of gastrointestinal physiology.

The creation of a special award honoring Dr. William D. Stovall, president elect of the Wisconsin State Medical Society, director of the State Laboratory of Hygiene, and former president of the Wisconsin Division of the American Cancer Society, was recently announced by the State Division of the Society and its lay organization, the Field Army. The amount of the award is to be \$250.00, and it will be given annually to a Wisconsin resident student at the University of Wisconsin whose primary interest in area of academic pursuit is related to cancer. The grant is to be known as the William Davison Stovall award created as a tribute to Dr. Stovall for his many years of faithful service to the organization, and in recognition of his accomplishments in the direction of the development of a public consciousness of malignant growths and the value of their early detection.

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University of Colorado School of Medicine

Dr. Robert M. Hill, professor of biochemistry, and Dr. A. R. Buchanan, professor of anatomy, received a grant

totaling \$24,000 from the Office of Navy Research. It will be used for studies on the hypothalamic region of the brain in relation to body temperature regulation.

Franklin W. Church, chief of the division of industrial hygiene, was guest speaker at the thirty-second annual meeting of the American Industrial Hygiene Association, held April 27 through May 1. He participated in a panel discussion on the subject, "The Status of Teaching of Industrial or Occupational Medicine in American Medical Schools."

To continue research in determining the effects of various heavy metals, particularly cadmium, on industrial workers, the National Institute of Health has renewed its grant for \$28,512 to the division of industrial hygiene of the school. The purpose of the research is to discover how much cadmium can be present in the air before it becomes harmful to workers in local smelters and also to determine how much cadmium can be present in body fluids before a toxic stage is reached and the workers must be removed from their jobs. To stimulate and encourage correlation between basic sciences and clinical research, the faculty of the school and regional doctors have organized the Medical Research Club of Colorado. Membership in the organization is open to anyone in the region interested in medical research or the allied sciences of physics, chemistry, biology and sociology. Meetings will consist largely of reports on medical research in progress by club members.

A conference on poliomyelitis was held May 12 and 13 to provide a refresher course on diagnosis and treatment. Dr. Frank H. Krusen of the Mayo Clinic was the principal speaker.

Dr. Frode Jensen, formerly a member of the staff of the Council on Medical Education and Hospitals of the American Medical Association, has been appointed coordinator of graduate education and assistant professor of medicine. He will organize and direct the new clinical division of the graduate school.

*Northwestern University
Medical School*

A gift of \$50,000 from the James Foundation of New York, Inc., to the Institute for the Study of Rheumatic Fever in the medical school at Northwestern University, has just been announced by Dr. J. Roscoe Miller, dean. Gifts to the institute, established in March, now total \$110,000. The U. S. Public Health Service made a grant of \$45,000 and the American Cyanimid Company, \$15,000, as initial funds for the founding of this comprehensive research department.

The institute, directed by Dr. Alvin F. Coburn, is the first such institute in any school of medicine in the nation. The research, calling for the full time services of at least eight top experts, in addition to Dr. Coburn, will be done in eight units devoted to bacteriology, immunology, pathology, physiology, biochemistry, immunochemistry, enzyme chemistry and, perhaps, organic chemistry.

In conjunction with the fundamental research work, the institute will have the services of additional investigators to engage in clinical research in collaboration with hospitals concerned with the care of rheumatic children. The institute's work, to begin on a full scale early this summer, will be the most comprehensive project of its kind to study methods for prevention and treatment of rheumatic fever and to gain new knowledge of the mechanism of the disease, which is the leading cause of death by disease in the 20-24 age group.

The James Foundation, established under the will of the late Arthur Curtiss James, New York financier, sponsors study in the fields of education, health, religion and social welfare.

Dr. Coburn, who had charge of epidemic disease control in the navy during the war, was assistant professor of medicine in the College of Physicians and Surgeons of Columbia University before coming to Northwestern to head the institute.

*Louisiana State University
School of Medicine*

New Appointments: Dr. James D. Rives, formerly clinical professor of surgery, professor and head of the Department of Surgery. He succeeds Dr. Urban Maes, who has retired and has been appointed professor emeritus. Dr. Robert L. Simmons, formerly director of the Lauderdale, Mississippi, Health Unit, associate professor of public health and preventive medicine on a full-time basis. Doctor Simmons succeeds Dr. George W. McCoy, who has reached the age of retirement and has been appointed professor emeritus. Dr. Sidney S. Chipman, formerly in the practice of pediatrics at Norwalk, Connecticut, and during the past year a student in the School of Public Health, Yale University, associate professor of pediatrics on a full time basis. Doctor Chipman will be director of the postgraduate extension program in pediatrics in the State of Louisiana on a joint appointment of the State University and the State Board of Health. Dr. Nelson K. Ordway, formerly instructor in pediatrics, Yale University, assistant professor of pediatrics on a full time basis. Dr. Edwin S. Kagy, formerly associate in tropical medicine at the School of Medicine, Tulane University, clinical assistant professor of medicine. Dr. Anthony Failla, formerly resident in otolaryngology at Charity Hospital, New Orleans, instructor in otolaryngology on a full time basis. Dr. Henry C. McGill, formerly intern in pathology at Vanderbilt University Hospital, assistant in pathology.

Drs. Joseph A. Danna and Narcisse F. Thiberge have reached the age of retirement and have been appointed clinical professors emeritus of surgery and medicine, respectively.

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Long Island College of Medicine

The college has obtained title to virtually all of the three block tract of land adjacent to the Kings County Hospital in Brooklyn, as a new campus for the school. Acquisition of this site, compris-

ing six acres of land, marks a major step in the college's plans for new buildings and general development. The purchase price for the tract was \$287,500. The projected move to this new site will place the center of the college's activities in close proximity to the Kings County Hospital of 2,400 beds; the 510 bed Kingston Avenue Hospital for contagious diseases; and the 3,450 bed Brooklyn State Hospital.

At the new site the medical school will be more centrally located with reference to the ten other hospitals and health agencies with which it maintains teaching affiliations.

On the land thus acquired, the college plans to erect modern buildings for medical education and research, and to sponsor a demonstration project in health maintenance among a number of Brooklyn families. The new structures will include a basic science building equipped with classrooms and research laboratories; a three-story library; an auditorium to serve both the students at the school and the practitioners of the community; and a hall of residence to provide living quarters for students and junior staff members. Ample space remains for future construction. The initial phase of development involves \$5,450,000 to purchase the land, to build and equip the science laboratory and to provide a "five-year maintenance fund" for urgent salary and research needs.

University of Illinois College of Medicine

Dr. Hermann J. Muller, professor of zoology at Indiana University, delivered the 1947 Charles Summer Bacon lecture May 28. He spoke on "Human Erosion by Mutation." The series was inaugurated in 1928 in honor of Dr. Bacon, professor emeritus of obstetrics and gynecology at the university. The members of the faculty and friends of Dr. Bacon contributed \$5,000 to found the lectureship.

Specialist training in allergy, inaugurated at the University of Illinois as

a one year postgraduate course in January, 1946, will be offered to 10 physicians during the next calendar year. The 12 months course will be conducted by the university's allergy unit, a joint organization of the colleges of medicine and pharmacy. The course will open October 1, 1947, and continue through September 30, 1948. Nineteen basic science subjects are listed in the curriculum. Three new subjects have been added including mycology, by Dr. Clifford Kalb; histopathology, by Dr. Isadore Pilot, and statistics by Dr. Elmer Becker. Ten doctors who have completed a year's internship and who graduated in the upper half of their class in medical school will be eligible for registration. The course will be conducted under the direction of Drs. William Welker, B. Z. Rappaport, and Adolph Rostenberg Jr.

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Emory University School of Medicine

Dr. George Bachmann is retiring from active chairmanship of the Department of Physiology at the end of the present session. He is remaining with the school in the capacity of professor emeritus.

Dr. James V. Warren, formerly associated with Emory University School of Medicine and during the past year assistant professor of medicine at Yale University School of Medicine, has accepted appointment as professor of physiology, chairman of the department, beginning July 1 of this year. Dr. Warren received in competition the "Travel Award" given by the American Physiological Society for the best abstract of a paper that might be read at the seventeenth International Physiological Congress which is to be held at Oxford, England, from July 22 to 25. This abstract was on a project carried out during Dr. Warren's association with the Department of Medicine at Emory.

Dr. Arthur P. Richardson has accepted appointment as professor of phar-

macology and chairman of the department beginning July 1 of this year. On the same date Dr. Harry A. Walker will become assistant professor of pharmacology. Both Dr. Richardson and Dr. Walker have been associated with the Squibb Institute for Medical Research.

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*University of Mississippi
School of Medicine*

Dr. John D. Reese, who has been associated with the Department of Pathology and Bacteriology at the University of Tennessee College of Medicine, has been appointed professor of pathology and bacteriology, effective February 1, 1947. Ira D. Hogg, Ph.D., who taught anatomy at the University of Pittsburgh School of Medicine for a number of years, has been appointed professor and chairman of the Department of Anatomy. Dr. James W. Heath, who was in the Department of Neurology at the College of Physicians and Surgeons, Columbia University, has been appointed associate professor of physiology. Dr. Thomas J. Brooks, Jr., formerly of the Bowman Gray School of Medicine, has been appointed associate professor in pharmacology. James W. Ward, M.S., M.A., formerly associate professor of zoology at Mississippi State College, has been appointed acting associate professor of anatomy. Dr. John Clyde Beard, Jr., has been appointed instructor in clinical medicine and assistant physician to the Student Health Service.

A new class of 29 freshmen was registered on January 30. This was done in order to partially fulfill the urgent need for physicians in Mississippi, and to meet the desire of returning veterans eligible for the study of medicine. The school will be in session during the entire summer of 1947.

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State University of Iowa

The organization of a new administrative unit in the area of the health sciences and services at the State University of Iowa has been announced by President Virgil M. Hancher. The estab-

lishment of this division of the university will combine under one administrative officer the Colleges of Medicine, Dentistry and Pharmacy, the University Hospitals, the Psychopathic Hospital, the State Bacteriological Laboratory and the newly authorized Hospital School for Severely Handicapped Children. The creation of the new division does not change the responsibilities of the deans of the several colleges nor of the administrators of the several hospitals.

The executive dean of the new university division is Carlyle Jacobsen, former dean of the Graduate College at the State University of Iowa and for some time assistant dean of the School of Medicine of Washington University, St. Louis. Dean Jacobsen is chairman of the Association's Committee on Student Personnel Practices.

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*University of Louisville
School of Medicine*

Three members of the faculty will retire at the end of the present session: Dr. Irwin Abell, clinical professor of surgery; Dr. Bernard Asman, clinical professor and head of the department of proctology; Dr. Chas. W. Hibbitt, clinical professor of obstetrics and gynecology.

Dr. Van R. Potter of the McArdle Memorial Cancer Research Laboratory, University of Wisconsin, completed on March 28 a three weeks' appointment as visiting professor of biochemistry at the University of Louisville, under a grant to the University of Louisville from the Commonwealth Fund of New York. In a series of ten lectures, Dr. Potter reviewed the contributions made by the study of intracellular enzymes to cellular physiology, with especial reference to the cancer problem.

Dr. William Dock, professor of internal medicine at Long Island College of Medicine, has been appointed visiting professor of medicine at the University of Louisville for three weeks, beginning April 7, on a Commonwealth Fund grant.

*Duke University
School of Medicine*

Dr. W. Henry Hollinshead, professor of anatomy, has accepted the appointment of professor of anatomy, Mayo Foundation and Graduate School of Medicine, University of Minnesota. In this position he will organize and head a department of anatomy which is being established by the Mayo Clinic and will continue his research on the peripheral nervous system and mechanisms in the reflex control of respiration and blood pressure. Dr. Hollinshead is one of the original staff of the Duke University School of Medicine, having been a member of the department of anatomy since 1930. He will assume his new duties July 1.

The Department of Medicine has recently added to its staff the following members: Dr. John Hickam, Harvard Medical School, 1940; Dr. Frank L. Engel, Johns Hopkins University, 1938; Dr. J. P. Myers, Stanford University, 1937.

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*Boston University
School of Medicine*

Dr. James M. Faulkner, professor of medicine in Tufts College Medical School, has been elected dean to succeed Dr. Donald G. Anderson, who will retire June 1 to take up his duties as secretary of the Council of Medical Education and Hospitals of the American Medical Association. Dr. Faulkner is a graduate of Harvard Medical School. For 10 years he was in charge of the electrocardiographic laboratory of the Thorndyke Memorial Laboratory.

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*University of California
Medical School*

The school, through its Medical Extension Division, announces a course in the applications of nuclear physics to the biological and medical sciences, extending from June 30 through July 18. The director of the course is Dr. Stacy R. Mettier, associate professor of medicine,

and head of postgraduate instruction, Extension Division. The general chairman is Dr. William J. Kerr, professor of medicine and chairman of the department.

Fees: For the entire course—lectures, laboratory and seminars, \$350. For the lectures only, including the evening seminars, \$100. Attendance limited. For further information, address Dr. Stacy R. Mettier, University of California Medical Center, San Francisco 22, California.

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*Baylor University
College of Medicine*

New Appointments: Dr. Russell J. Blattner, professor and chairman of the department of pediatrics; Dr. Warren T. Brown, professor of psychiatry and chairman of the department of neuropsychiatry; Russell C. Huggins, Ph.D., associate professor of pharmacology; A. S. Harris, Ph.D., associate professor of physiology; F. B. Moreland, Ph.D., associate professor of biochemistry; Dr. Dan E. Jenkins, assistant professor of medicine; Florence M. Heys, Ph.D., instructor in pediatrics; Dr. Melvin D. Haley, instructor in pathology; Dr. Harold L. Dobson, instructor in biochemistry; Dr. James R. Schofield, instructor in anatomy.

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*Wayne University
College of Medicine*

Dr. William J. Stapleton, Jr., assistant dean and professor of medical jurisprudence, will retire at the end of the present session. He has been a member of the faculty since 1907. Recently his colleagues in the university held a testimonial meeting at which many expressions of esteem and appreciation of his fine and devoted service were made.

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College of Medical Evangelists

Dr. James J. Short of New York has been appointed associate professor of medicine.

*University of Pennsylvania
School of Medicine*

Drs. T. Grier Miller, Truman G. Schnabel, Charles C. Wolferth, and Francis C. Wood. The three first-named men now hold full professorships in clinical medicine, while Dr. Wood's appointment marks an advancement from an assistant professorship in medicine.

When the new appointments become effective at the beginning of the university's fiscal year on July 1, Dr. Wood will also become chairman of the department of medicine, succeeding Dr. O. H. Perry Pepper in that position.

After forty years of service Dr. Pepper asked to be relieved of his administrative duties but will continue as professor of medicine and will teach and practice in the University Hospital until he reaches the age of retirement.

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*University of Michigan
Medical School*

Burton L. Baker, Ph.D., assistant professor of anatomy, received the annual Henry Russel Award. Mr. Baker, the twenty-second recipient of the Henry Russel Award for achievements in scholarly activity and a promising future, was selected for his research work dealing with the microscopic structure and internal chemistry of cells, especially in relation to their secretory activity. His investigations have centered about the endocrine glands that regulate the physiology of reproduction.

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*Cornell University
Medical College*

Dr. Frank Glenn has been appointed Lewis Atterbury Stimson professor of surgery and surgeon-in-chief of the New York Hospital. He will succeed Dr. George J. Heuer who will retire. Dr. Glenn graduated from Washington University School of Medicine in 1927. He interned and was a resident at the Peter Bent Brigham Hospital and was the last of the Gorham Peters Traveling Fellows appointed by Dr. Harvey Cushing.

*University of North Carolina
School of Medicine*

The establishment of a four year medical school at Chapel Hill has been assured by an appropriation of \$3,790,000 by the State Budget Commission. The Medical Care Commission will award loans of \$600 per school year to students who will agree to practice in towns of less than 2,500 population and repay the loans at 4% interest.

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Jefferson Medical College

At the 123rd Commencement, 151 students were graduated, bringing the total number of graduates to 17,815. Many prizes were awarded to the graduates for excellent work done in course. The Commencement address was delivered by Ralph Cooper Hutchinson, Ph. D., president of Lafayette College. His subject was, "The Professional Man."

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*Washington University
School of Medicine*

Dr. Carl F. Cori, professor of pharmacology, has been awarded the second intermediate research prize of \$5,000 for distinguished achievements in the field of human metabolism. The award is made annually by the National Science Fund of the National Academy of Sciences.

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*Temple University
School of Medicine*

Dr. Glen G. Gibson, who was associate professor of ophthalmology, has been advanced to professor and head of the Department of Ophthalmology. He succeeds the late Dr. Walter I. Lillie, whose assistant he was for 10 years.

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*University of Kansas
School of Medicine*

A fountain in a court yard of the University of Kansas Hospitals, Kansas City, was dedicated to the memory of Dr. Logan Clendening, who died January 31, 1945.

*Yale University
School of Medicine*

Dr. Stanhope Bayne-Jones, professor of bacteriology and director of the board of scientific advisers, Jane Coffin Childs Memorial Fund for Medical Research, has been appointed president of the Joint Administrative Board of the New York Hospital-Cornell Medical Center.

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Medical College of Virginia

Dr. Harvey B. Haag, professor of pharmacology, who has served as acting dean since the retirement of Dr. J. P. Gray, has been appointed dean.

*Indiana University
School of Medicine*

Dr. Dwain N. Walcher, instructor in pediatrics at Yale, has been appointed assistant professor of pediatrics. Dr. Louis W. Spolyar has been appointed assistant professor of public health.

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Albany Medical College

Dr. Harold C. Wiggers, associate professor of physiology in the College of Medicine of the University of Illinois, has been appointed professor and head of the department of physiology and pharmacology, to succeed Dr. Himwich, who resigned.



Aerial view of site in Brooklyn for proposed Long Island College of Medicine—Brooklyn medical center. Area outlined in white (center), has been acquired by the medical school for its new campus which will contain four buildings. In the background are the Kings County Hospital and the Kingston Avenue Hospital for Contagious Diseases. Shown at right is the Brooklyn State Hospital. These three institutions contain more than 6,000 beds, and with the addition of the college's new teaching and research facilities, will form one of the country's largest medical centers designed to forward health standards in all of Brooklyn and Long Island.

General News

Passano Foundation

Selection of Dr. Selman A. Waksman, microbiologist at the New Jersey Agricultural Experiment Station, New Brunswick, New Jersey, as the 1947 recipient of the Passano Foundation Award is announced by the Board of Directors of the Foundation. Presentation of the \$5,000 cash award will be made at a dinner to be attended by about 100 outstanding medical men at the Ritz-Carlton Hotel, Atlantic City, on Thursday evening, June 12th. Established in 1943 by The Williams & Wilkins Company, medical publishers, of Baltimore, Maryland, the Foundation proposes to encourage medical research, especially that which has clinical application, and has established the award as one of its activities. Dr. Emil Novak, Associate in Gynecology in the Johns Hopkins University Medical School, Dr. Nicholson J. Eastman, Professor of Obstetrics in the Johns Hopkins, and Dr. George W. Corner, Director of the Embryological Laboratory of the Carnegie Institution of Washington, represent the medical profession on the Board of the Foundation.

Sir Howard Florey, of Oxford, England, who was knighted for his development of the clinical applications of penicillin, will make a brief address, following which the award will be presented to Dr. Waksman by Robert S. Gill, President of The Williams & Wilkins Company and of the Passano Foundation. Dr. Waksman's address will be entitled, "Antibiotics and Tuberculosis—a Microbiological Approach." Dr. Waksman receives the award for his original research in the field of antibiotics culminating with his discovery of streptomycin, which among its many uses gives promise of being useful in the suc-

cessful treatment of tuberculosis. Previous winners of the Passano Award are: Dr. Edwin J. Cohn, of Harvard Medical School, and Dr. Ernest W. Goodpasture, of Vanderbilt University Medical School.

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College of Pathologists

The College of American Pathologists, formed December 13, 1946, has opened a temporary office at 203 North Wabash Avenue, Chicago. The objectives of the organization are (a) to foster the highest standards in education, research and the practice of pathology; (b) through study, education and improvement of the economic aspects of pathology to advance the science of pathology and to improve medical laboratory service; (c) to maintain the dignity, precision and efficiency of the specialty of pathology for the service of the common good. Membership is limited to pathologists certified by the American Board of Pathology. Junior membership is available to residents in pathology who have completed two years of their requirements for examination by the American Board of Pathology. Officers of the organization are Drs. Frank W. Hartman, Henry Ford Hospital, Detroit, president; Tracy B. Mallory, Massachusetts General Hospital, Boston, secretary-treasurer, and Melbourne G. Westmoreland, Chicago, executive secretary.

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Menninger School of Psychiatry

The Menninger Foundation School of Psychiatry and its relation to the Winter Veterans Administration Hospital in Topeka, Kansas, are described in the May, 1947, number of the *Bulletin of the Menninger Clinic*. The curriculum of

the school including the program of clinical instruction is set forth in detail. This *Bulletin* will be sent free on request to any medical student or intern. Address requests to Dr. B. E. Boothe, Director of Professional Education, Winter Veterans Administration Hospital, Topeka, Kansas.

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Texas Medical Center

A campaign is in progress to raise money needed to construct the \$2,500,000 St. Luke's Hospital, which is to be built by the Episcopal Church as a part of the Texas Medical Center at Houston. Mr. and Mrs. R. H. Cullen, Houston, have given \$1,000,000, and \$500,000 has been received from the M. D. Anderson Foundation of Houston. A 6 acre site is a further gift from the Anderson Foundation. The hospital will have 250 beds. The Texas Medical Center is expected to include the Baylor Medical School, University of Texas Dental School, Hermann Hospital, a children's hospital, tuberculosis hospital, nurses' training school, x-ray laboratory and pathologic laboratory, and specialized study for pediatrics, geriatrics and numerous other phases of medicine.

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The Mayo Memorial

The Committee of Founders appointed in 1943 to select a memorial to Drs. William J. and Charles H. Mayo are asking for \$350,000 still needed to complete the \$3,000,000 construction cost for the Memorial Medical Center at the University of Minnesota. The legislature has granted \$1,500,000. More than 3,000 corporations and individuals have subscribed \$1,162,000, leaving about \$350,000 still to be subscribed. The plans

provide for a central nineteen story tower unit which will be connected with the Medical Sciences Building by a four story extension which will use the Mayo Memorial Auditorium with a seating capacity of 600. An underground garage will be provided for about 200 cars.

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Harofe Haivri:

The Hebrew Medical Journal

The Spring issue of *Harofe Haivri* (The Hebrew Medical Journal), a semi-annual bilingual publication, inaugurates the 20th anniversary year. The section on Palestine and Health contains an enlightening statistical survey on the health of the young generation of Palestine, the historical and archaeological aspects of the Hot Springs of Tiberias. Under the heading of Historical Medicine, is presented a treatise discussing the classical pronouncements on medical ethics by Asaph the physician, who lived in the 9th century. The original articles are summarized in English to make them available to those who are unable to read Hebrew.

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University of Miami

The trustees of the University of Miami authorized the establishment of a school of medicine to be opened by October. The step was taken as the state legislature was debating bills to establish a medical and dental college as a branch of the University of Florida at Gainesville. The city of Miami has offered 10 acres near the James M. Jackson Memorial Hospital as a site. The building is not needed to open the school, since first year's classes can be held in present classrooms.

Book News

A Textbook of Medicine

Edited by Russell L. Cecil, M.D., Professor of Clinical Medicine, Cornell University Medical College; with the assistance of Walsh McDermott, M.D., Associate Professor of Medicine, Cornell University Medical College; Associate Editor for Diseases of the Nervous System, Harold G. Wolff, M.D., Associate Professor of Neurology, Cornell University Medical College. Ed. 7. W. B. Saunders Company, Philadelphia. 1947. Price, \$10.

The list of contributors to this book represents the "peerage" in American medicine. Each one is a specialist in a given field. Some former contributors are not represented, therefore their contributions have been rewritten by the newly added members to the staff of writers. Some new articles on subjects not covered in previous editions have been added. Textbooks are increasing in size and are becoming unwieldy. Wide pages make reading more difficult. In this book, however, the double column has been adopted which facilitates reading greatly. The value of the book is well known. It does not need further comment.

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Diseases of the Chest

I. With Emphasis on X-Ray Diagnosis. By Eli H. Rubin, M.D., Attending Physician, Division of Pulmonary Diseases, Montefiore Hospital and Country Sanatorium, New York.
II. The Principles of Surgical Treatment. By Morris Rubin, M.D., Assistant Visiting Surgeon, Triboro Hospital and Morrisania Hospital, New York. W. B. Saunders Company, Philadelphia. 1947. Price, \$12.

A complete and well written discussion of diseases of the chest, illustrated by many (155) reproductions of chest films, colored drawings of pathological entities, microscopic slides. The book is beyond the use of the medical student but for the practitioner it will prove to be a daily help in diagnosis and treatment. The surgical section is of special value. The text is presented in double columns, making for easy reading. But why make these books so heavy?

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Physician's Handbook

By John Warkentien, M.D., and Jack D. Lange, M.D. Ed. 4. University Medical Publishers, Chicago. 1947. Price, \$1.50.

Summarizes diagnostic procedures and factual data which must be quickly available. Very handy and useful.

The Principles and Practice of Medicine (Originally written by William Osler, M.D.)

By Henry Christian, M.D., Hersey Professor of the Theory and Practice of Physic, Emeritus, Harvard University. Ed. 16. D. Appleton-Century Company, New York. 1947. Price, \$10.

For 55 years, Osler's Practice has been a standard textbook in medical schools. It is possible that every graduate in medicine has a copy of one of the editions of this fine work. At any rate, the publisher makes the claim that a sufficient number of copies of the book have been printed to supply every medical graduate since 1892 with a copy with about 50,000 copies left over for distribution in other countries. The present edition, again the work of one man, is a thorough revision so as to bring it completely up to date. This edition also contains a brief review of the history of medicine as told in sixteen editions of Osler written by Dr. James G. Carr, professor of medicine, Northwestern University Medical School. The index covers 150 pages. It is by far the largest index this reviewer has seen. It should be complete. The author must be complimented on his good work and the publishers for their contribution.

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English-Spanish Chemical and Medical Dictionary

By Morris Goldberg, Chief Technical Translator, Translation and Research Bureau, New York City. McGraw-Hill Book Company, New York. 1947. Price, \$10.

A book of 692 pages giving the translations and definitions of more than 40,000 of the most important English terms pertaining to medicine, surgery, pharmacy, chemistry, dentistry, veterinary biochemistry, bacteriology and related sciences. Names and descriptions are also given for the scientific equipment employed in each field. A good book for those who require a knowledge of scientific terms in the Spanish language. But why use such heavy paper? A resting place for the book must be used if it is to be consulted comfortably.

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Textbook of Medicine (By Various Authors)

Edited by Sir John Conybeare, K.B.E., M.C., D.M. Oxon., F.R.C.P. Physician to Guy's Hospital, London. Ed. 3. The Williams & Wilkins Company, Baltimore. 1946. Price, \$8.

Revised and rewritten with addition of much new material.

Surgical Pathology

By William Boyd, M.D., Professor of Pathology, University of Toronto. Ed. 6. W. B. Saunders Company, Philadelphia. 1947. Price, \$10.

Revised and much of the material rewritten. An entirely new section has been added dealing with the physiology and pathological physiology of congenital heart disease. Other new material includes tumors of the larynx, pinealoma, Bittner's milk factor in relation to breast carcinoma, avitaminosis in cancer of the mouth, Papanicolaou vaginal smear method in diagnosing carcinoma of the cervix, fibrous dysplasia of bone, inflammatory nodules of muscle in chronic arthritis and fibrositis of the back. This book meets a great need both for student and practitioner.

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Gynecology: With a Section on Female Urology

By Lawrence R. Wharton, M.D., Assistant Professor of Gynecology, Johns Hopkins University Medical School. Ed. 2. W. B. Saunders Company, Philadelphia. 1947. Price, \$10.

Revised and much rewriting. The sections on embryology and congenital malformations have been almost completely rewritten. Significant changes and additions have been made in other chapters, especially wherever physiologic or chemotherapeutic problems are under discussion. The section on female urology has been enlarged by the addition of a chapter on water cystoscopy and a separate chapter on the female urethra.

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Diseases of Metabolism: Detailed Methods of Diagnosis and Treatment

Edited by Garfield G. Duncan, M.D., Clinical Professor of Medicine, Jefferson Medical College. Ed. 2. W. B. Saunders Company, Philadelphia. 1947. Price, \$12.

The fundamentals and disturbances of metabolism are reviewed and interpreted in the light of recent investigative work. Clinical consideration are presented in detail. The student may not find this book of help in his studies but the practitioner will find it to have great value in his daily work.

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Peripheral Vascular Diseases (Angiology)

Saul S. Samuels, M.D., Consulting Vascular Surgeon, Long Beach Hospital, Long Beach, New York. Oxford University Press, New York. 1947. Price, \$2.50.

The author has included in only 80 pages much valuable information about vascular diseases, presented in tabular form with appropriate selected bibliography.

Rehabilitation Through Better Nutrition

By Tom D. Spies, Department of Medicine, University of Cincinnati College of Medicine. W. B. Saunders Company, Philadelphia. 1947. Price, \$4.

This book is the outcome of nutrition studies made by the author at the Hillman Hospital, Birmingham, Alabama, over a long period of years. It is essentially an exposition of practical therapeutics for deficiency diseases. Proper nutrition is assuming an important place in medical practice although it has not yet received adequate attention in the curriculum of medical schools. Medical students, as well as practitioners, will find this book an aid in understanding and appreciating the value of diet, especially vitamins, in the treatment of dietary deficiencies.

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A Textbook of Pathology

By E. T. Bell, M.D., Professor of Pathology, University of Minnesota. Contributors: B. J. Clawson, M.D., Professor of Pathology, and J. S. McCartney, M.D., Associate Professor of Pathology, University of Minnesota. Ed. 6. Lea & Febiger, Philadelphia. 1947. Price, \$10.

Retains the outstanding characteristics of its predecessors. It is brief yet comprehensive, clear and definite, well written and well organized. New material both in text and illustrations has been introduced and much of the work has been thoroughly revised. The author emphasizes the fact that clinical medicine is a direct continuation of pathological studies and not an abrupt entrance into a new field. The illustrations are original, the arrangement is simple and the subject is presented as a living science that explores the nature and causes of disease.

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Biological Symposia**Volume XII: Estimation of the Vitamins**

Edited by W. J. Dann, School of Medicine, Duke University, and G. Howard Satterfield, North Carolina State College of Agriculture and Engineering of the University of North Carolina. The Jaque Cattell Press, Lancaster, Pennsylvania. 1947. Price, \$6.50. (Now published by the Ronald Press Company, 15 East 26th Street, New York 10, N. Y.)

This volume deals with the quantitative estimation of the vitamins by all types of method which have been widely investigated or employed. In general, separate papers deal with the biological assay involving animals, with microbiological assay using microorganisms, and with physico-chemical analysis for each vitamin for which the procedures have been worked out.

Buchanan's Manual of Anatomy

Ed. 7. Edited by F. Wood Jones, M.B., F.R.C.S., Sir William Collins Professor of Human and Comparative Anatomy at the Royal College of Surgeons of England, assisted by members of the Anatomy Staff in the University of Manchester. A William Wood Book: The Williams & Wilkins Company, Baltimore. 1947. Price, \$10.

A book which has survived for forty-one years must fill a great need and have proven its worth as a text for medical students. It presents the subject topographically. One innovation is the inclusion of a series of X-ray plates. It is well illustrated by nearly nine hundred original drawings. Students will find the appended glossary handy and useful. All in all, it is a good book for the student to have and use.

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Clinical Pediatrics

By I. Newton Kugelmass, M.D., Ph.D., Sc.D., Attending Pediatrician, Downtown Hospital, Pan-American Clinic, Hechacher Institute, New York. Oxford University Press, New York. 1947. Price, \$4.

The text is in digest form. All phases of diseases are summarized briefly and tersely and proven therapeutic measures are indicated. An epitome which students will find helpful—as well as practitioners.

Penicillin Therapy: Including Streptomycin, Tyrothricin and Other Antibiotic Therapy

By John A. Kolmer, M.D., Professor of Medicine, School of Medicine, Temple University. Ed. 2. D. Appleton-Century Company, New York. 1947. Price, \$6.

Completely revised and brought up to date. A practical work in that it clearly, concisely and authoritatively covers the pharmacology and toxicity, the principles of therapy, recommended dosages in specific conditions, the duration of therapy, adjuvant therapy where useful and the do's and don'ts of administration.

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Atlas of Histopathology of the Skin

By G. H. Percival, M.D., Ph.D., Grant Professor of Dermatology; A. Murray Drennan, M.D., Professor of Pathology, and T. C. Dodds, F.R.P.S., Laboratory Supervisor of Pathology—all of the University of Edinburgh. 376 photomicrographs in color. A William Wood Book: The Williams & Wilkins Company, Baltimore. 1947. Price, \$16.

Portrays in pictorial form the microscopic changes found in the more common diseases of the skin. The text matter is limited. The illustrations are not only exceedingly well made but also most instructive. A highly commendable work.

SCOTT AND VAN WYCK'S ESSENTIALS OF OBSTETRICS AND GYNECOLOGY

By WILLIAM A. SCOTT, M.B., F.R.C.S., (Can.)

Professor of Obstetrics and Gynecology

and

H. BROOKFIELD VAN WYCK, M.B., F.R.C.S. (Can.)

Assistant Professor of Obstetrics and Gynecology

University of Toronto

Octavo, 390 pages, with 126 illustrations on 91 figures, 13 in colors.

Published December 1946. Cloth, \$5.50.

This is a most successful attempt to present the fundamentals of both obstetrics and gynecology in a single volume. In spite of its comparatively small compass, this outline simplifies and clarifies the complexities that have so often baffled both the student and practitioner. It offers a clear presentation of the essentials of both subjects. It is an excellent review of the most modern practices.

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